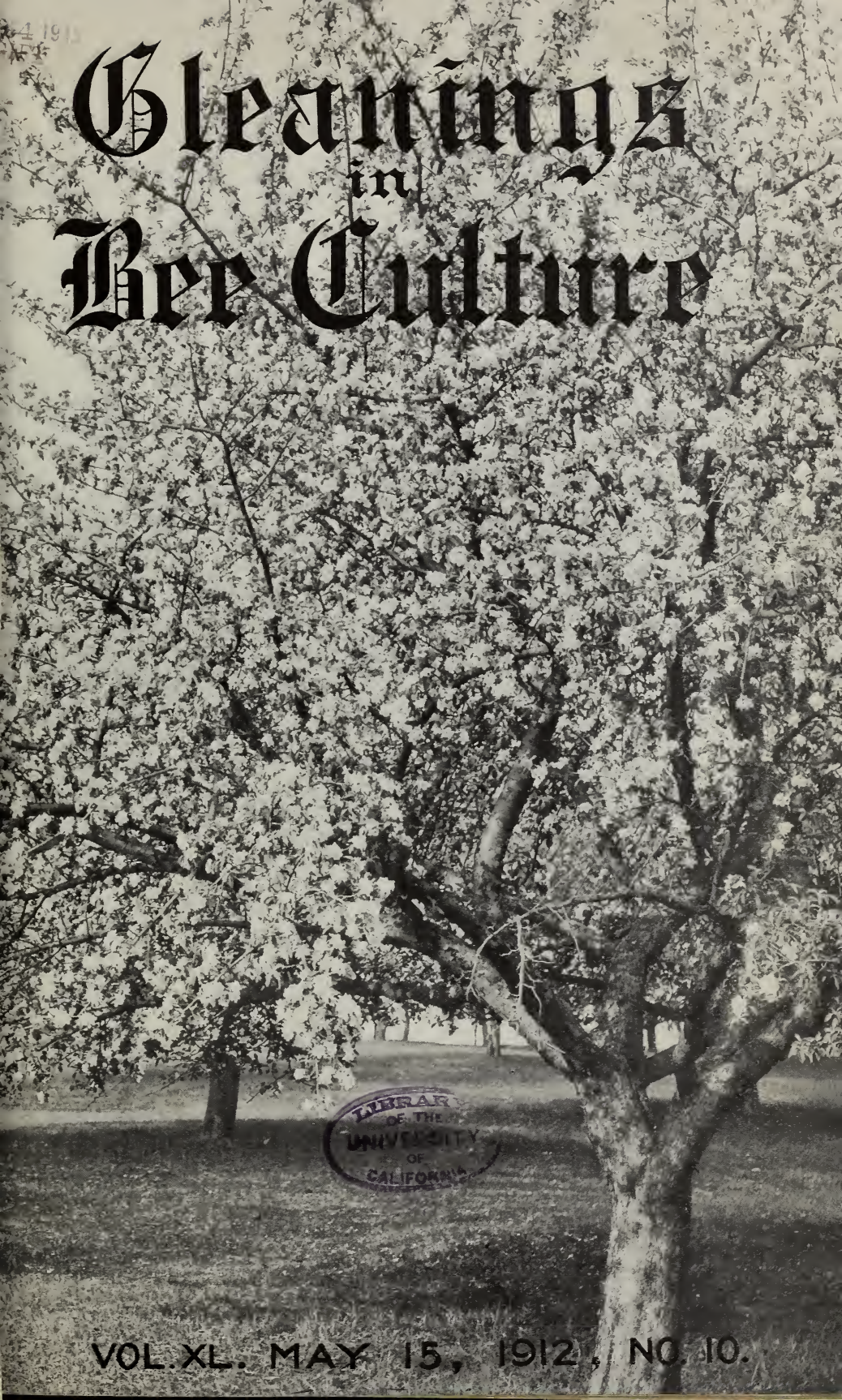


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Gleanings in Bee Culture



VOL. XL. MAY 15, 1912, NO. 10.



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You may have a catalog of supplies; but if you haven't ours for 1912 you have missed something really worth while, and should get one at once. It is the largest and most complete ever published—more than a mere price list of supplies—a book that every beekeeper can read with pleasure and profit. Beginners will find answers to many perplexing questions, and advanced beekeepers timely suggestions that will save them money. Old customers are writing us frequently letters like the following:

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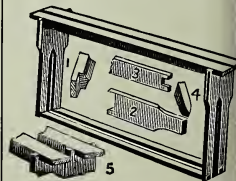
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VOL. XL

MAY 15, 1912

NO. 10

Editorial

HONEY PROSPECTS.

A GREAT abundance of fruit bloom and beautiful weather is being reported from all over the United States. In many localities the prospects from clover are excellent; but many say there is a great lack of bees, owing to the severe winter losses.

SAMPLES OF BROOD FOR EXAMINATION NOT TO BE SENT TO MEDINA.

We must again remind our readers that we prefer not to examine suspicious brood here at this office. We formerly did this, but now that bacteriological examinations are made free of charge under the supervision of Dr. E. F. Phillips, of the Bureau of Entomology, Washington, we forward all samples which we receive direct to him.

PERFECTLY POLLINATED BLOSSOMS MORE RESISTANT TO FROSTS.

IN the *Country Gentleman* for March 23, 1912, p. 13, is a most able article on the value of bees to the fruit-grower. The old idea of bees stinging grapes, etc., is scouted, and the true value of the bee clearly shown. The writer of this article is well informed, as is shown by the following extract:

Bees are absolutely necessary to the farmer and fruit-raiser. Indeed, fruit-raising is chiefly dependent for its very existence upon bees. Of the many varieties of bees, the common honey-bee is the most valuable. Without it the orchardist would be in a sad plight indeed. Although the wind will pollinize some varieties of fruit, Nature's chief aids in her great work of producing more and better fruit are the honey-gatherers. They pollinize the individual blossoms; and as they fly from one tree to another they also accomplish the cross-fertilization so necessary to the raising of good fruit. Their pollen-baskets are filled at one tree, and part of their load is left at the next. For this reason the fruit-raiser should keep bees, himself or else encourage his neighbors to do so. If he can possibly manage it, however, he should have his own bees. If he does not wish to keep bees he can doubtless arrange with a near-by beekeeper to have some hives placed in his orchard in early spring. This sort of arrangement is reported from California, both beekeeper and fruit raiser being well satisfied.

Fruit failures are often caused by wet or cold weather. At such times the bees work only in the home orchard or in the immediate neighborhood. A few sunny hours will give them a chance to pollinize the bloom near the hives; and as a rule, during such weather, they will give their whole attention to the home orchard. Since fruit bloom that is "set" will stand a lower degree of frost without damage than the unpollinized bloom, prompt pollenization may easily be the means of

saving a crop of fruit from destruction by frost. Bees are to the fruit-grower, therefore, a sort of frost insurance.

DO BLACK BEES WINTER BETTER THAN THE YELLOW RACES?

ONE of our subscribers, referring to the wintering of bees in his locality, writes that the blacks wintered fairly well, while the yellow colonies were either weak or died out altogether. It will be remembered how, years ago, we used to have to buy up colonies of black bees to make up for losses of Italians. We have never believed there was any very great difference between the black and yellow bees in the matter of wintering. In most cases which we have traced down, we have found that the bees that have wintered well have had some favorable conditions that the bees which died did not have.

One of the most favorable conditions for wintering bees is a spot that is sheltered from the fierce wintry blasts. Box hives, usually under a shed, with its back to the west or prevailing winds, often winter quite well, when Italian bees in doubled-walled hives out in the open die. Perhaps there is a lesson here in combining shelter from the winds and double-walled hives. We are coming to believe more and more that we do not attach *enough* importance to wind-breaks, whatever we may say about the value of double walls and porous packing. Let's have both in the future.

WHY CLOVER YIELDS SOME SEASONS AND NOT OTHERS; THE QUESTION OF LIMING.

On page 97, Feb. 15, the editor calls attention to the lessened yield of clover, and attributes it to the exhaustion of lime in the soil. I may be a little dull, but I don't see why we should now and then get an abundance of honey from clover when no lime has been added to the soil.

Middlebury, Vt.

J. E. CRANE.

As we explained in our editorials on this subject, there are many localities where there is no deficiency of lime. When clover fails to yield, the failure, in such cases, is due to other causes, such as winter-killing or drouth. When conditions are just right for a clover flow, a deficiency in lime will not necessarily prevent a yield of nectar; but when they are from poor to fair, a lack of lime means a total failure of clover honey.

Now, then, if the right amount of lime is put on poor soils at the right time, and in the proper way, they may yield clover nectar even under poor or fair conditions. Do we make the matter clear? In any event, do not get the notion *all* soils everywhere need lime. But there is a tendency toward a lime deficiency everywhere; and in many localities the lime has gone out so much that the land has become clover-sick. There is, in fact, no "sickness" about it, but a want of one element—lime. Clover, like animals, must have a balanced ration. Chickens, for example, must have green food and grain in order to lay in the spring. They must, in fact, have a variety. This item by Mr. Crane was written for Siftings; but as it required a more elaborate answer than could be made in that department we have placed it in the editorial columns.

LESS FRUIT ON ACCOUNT OF LACK OF PROPER POLLINATION OF THE BLOSSOMS.

THE severe losses that took place last winter will probably mean a considerable reduction in the amount of fruit produced, by reason of the fact that there will not be enough bees to pollinate the fruit blossoms properly in many localities. The fruit-growers are feeling this very keenly, and are making strenuous efforts to get bees from somewhere.

A large number have asked where they can get bees to make up for winter losses. Only a few have responded saying that they had bees for sale. Among the former is W. J. Manley, of Sandusky, Mich., one of the most extensive honey-producers in this country. Parties who have agreed to furnish him a carload of bees are now unable to do so, owing to the severe winter losses. You will find elsewhere that he has in the Wants and Exchange department an advertisement for bees. Albert J. Hann, of Pittstown, N. J., is another party who would like to get in touch with some one who has bees for sale.

We have a carload of bees on the way from Florida, that we expect before this journal goes to press. We shall probably send out an order for another carload. We have been hunting right and left for bees in the North, but have secured only a few scattered lots. Practically every one who has any bees is mighty glad of what he has.

David Keene, of Blackbird, Del., has twelve of fifteen colonies of hybrids in eight-frame hives that he will sell at \$3.00 at his postoffice. If any one has any bees for sale now is the time to advertise them.

THE NEW POSTAL RULING CONCERNING THE MAILING OF QUEEN BEES.

ON March 23 the Postoffice Department amended paragraph 7, section 496, general order 6158, to read as follows:

"Queen bees and their attendant bees, when accompanied by a certificate from a State or Government inspector that they have been inspected and found free of dis-

ease," may be transmitted in the mails. The literal enforcement of this order would make it almost impossible to ship any queen bees, practically ruining the queen business, and causing a serious handicap to bee culture in general. When we received notice of this amended order from the Postmaster-General we had on hand something like a hundred queens ready to go out. While our apiaries had been inspected by our State foul-brood inspector last year, and found free of disease, yet this particular lot of queen bees and their attendants, which we were proposing to send out, had not been inspected. Obviously it would be impracticable for any State or Government inspector to see every queen bee and her attendants before they were sent out; and, besides, no examination of the queen bees and their attendants would show the presence of any contagious disease such as American or European foul brood in the hive from which they came. An examination of the brood is what determines the condition in this respect. The order, therefore, was clearly unworkable. Evidently some blunder had been made. We immediately took the matter up with Dr. E. F. Phillips, of the Bureau of Entomology, and our manager, Mr. Selser, of our Philadelphia office. The result was, a letter from the Department of Agriculture, signed by Secretary Wilson, was sent over to the Postoffice Department, recommending a further amendment reading as follows:

Queen bees and their attendant bees when accompanied by a copy of a certificate of the current year from a State or Government apiary inspector, to the effect that the apiary from which said queen bees are shipped is free from disease, or by a copy of a statement by the beekeeper made before a notary public or other officer having a seal that the honey used in making the candy used in the queen-mailing cage has been diluted, and boiled in a closed vessel.

This was accepted by the Postoffice Department, and duly signed by Postmaster-General Hitchcock, May 3. It will be observed that this amended form is workable, and at the same time still makes it possible for a queen-breeder who can not secure the services of a State or Government inspector to send out queen bees, providing he makes oath to the effect that the honey he uses in the candy has been properly diluted, and boiled in a closed vessel. The order of March 23 practically prohibited the mailing of any queen bees, and had it not been for the latter half of the newly amended paragraph 7, queen-breeders so situated that they could not secure the services of a State or Government inspector would be compelled to go out of business. The new order, of May 3, is a step in advance. It will not handicap queen-breeders nor beekeeping in general as did the order of March 23. It will prevent the spread of bee diseases through honey from infected hives that might be used in making the queen-cage candy.

When we prepared the editorial that was published on page 222, advising all queen-breeders to boil all the honey they use in

making queen-cage candy, we were not aware of any new ruling contemplated by the Postoffice Department. While most of the principal queen-breeders subscribed to our recommendation, there were some who did not. These latter have since sent in their names agreeing to boil the honey. In the mean time the recent order of the Postoffice Department makes it obligatory on all breeders—at least so far as it relates to queen bees sent through the mails.

As it is not practical to send single queens by express, we anticipate that the new ruling of the Postoffice Department is going to prove of great value to the industry of beekeeping in the United States. The Bureau of Entomology, and particularly Dr. E. F. Phillips, is to be commended for its promptness in securing a recommendation signed by Secretary Wilson for a workable ruling. Had the amended ruling not followed as soon as it did, thousands of queens would have been lost, and a great damage would have been done to the industry at large. All is well that ends well, only in this case we are better off than we were.

THE AMERICAN BEE JOURNAL AND THE BEE-KEEPERS' REVIEW CHANGE HANDS.

ABOUT a month ago we were informed that the *American Bee Journal*, owned by Geo. W. York since 1886, had been sold to C. P. Dadant & Sons, of Hamilton, Ill. That journal will be published hereafter at Hamilton, and all remittances and communications to the paper should be sent to the Dadants as above. Further announcements, doubtless, will be made in the *American Bee Journal*. We understand that Mr. York has gone into other business, and that Mr. C. P. Dadant, who has been a frequent contributor to "the Old Reliable," will be the new editor.

Mr. Dadant is one of the best-known beekeepers in the world. His crops of honey have gone up into the thousands of pounds. At one time the Dadants owned and operated some seven or eight out-apiaries. Both the senior, the late Charles Dadant, and in later years his son, C. P. Dadant, have been recognized as authorities on bees, not only in America, but particularly in Europe. Indeed, the Dadant system of management and the Dadant hive are used very largely by the most progressive beekeepers of Europe. Mr. C. P. Dadant, therefore, comes into the editorial field as one peculiarly well equipped for the work. The Dadants have always been recognized as thoroughly conscientious in all their dealings, and it is not necessary to say they have been successful in their business. Any one who knows any thing about the Dadants knows that their product, comb foundation, has always been of the very highest grade. For many years they have advertised, and stood by their guarantee, that every inch of their foundation is equal to the samples they send out, and the best they can make. It is, therefore, with peculiar pleasure that GLEANINGS

extends the right hand of fellowship to the new proprietors of the *American Bee Journal*.

Some months ago we announced that Mr. E. B. Tyrrell, of Detroit, Secretary of the National Beekeepers' Association, had acquired the *Bee-keepers' Review* from the wife of its former editor and proprietor, Mr. W. Z. Hutchinson. Mr. Tyrrell took hold of the paper with zeal and enthusiasm. He has done what many another man could not have done with ten times his experience; and that is, he has maintained the old subscription list of the *Bee-keepers' Review*, which everybody said would die a natural death when its old editor and founder passed away from the scenes of this earth. As we have before said in these columns, Mr. Hutchinson was a most remarkable man. He was one of the best editorial bee writers this country has ever known. He had an attractive, clear, and concise style. His personality was unique. When such a man died, naturally every one supposed that no one could be found to take his place.

But it appears that in his capacity as editor of the *Bee-keepers' Review* and Secretary of the National Beekeepers' Association Mr. Tyrrell has really been compelled to do many things double, simply because they applied to different kinds of business. Then came the question of separating the office work of the National from his own private work on the *Review*. Then there was another factor to be considered, and that was, there was a demand for an official organ that could represent the organized bodies of beekeepers located in the various States. To make a long story short, it was finally decided to sell the *Review* to the National. Announcements are now out stating that the actual transfer has taken place, and the *Review* is now the property of the National, to be edited by its present Secretary, Mr. Tyrrell. Just how far the policies of the *Review* will be changed, of course remains to be seen.

In Europe there are several beekeepers' societies that have their own official organs, and naturally enough the question arises, "Why should not the beekeepers of this country, in their organized capacity, have an organ of their own?" The question has been answered now, and what its success will be is yet to be determined. Of course, it means that the National will be responsible for its finances, and it may be that its directors will have to dig down into their pockets to tide it over some tight places. There seems to be entire harmony of action on the part of the directors toward Mr. Tyrrell, the Secretary, and we see no reason why, with good management and co-operation, the new deal should not be successful.

Mr. Tyrrell is a young man of sterling qualities. The merry twinkle of his eyes will win friends toward the new project everywhere. It is a pleasure to know him. If any one can put an official organ on a paying basis he can. Success to you, Bro. Tyrrell, and your directors.

Stray Straws

DR. C. C. MILLER, Marengo, Ill.

JUST BEEN OUT looking at the white clover, April 29. Looks rather scarce.

As a SOIL-IMPROVER, sweet clover is not half appreciated. At the Ohio Experiment Station sweet clover land yielded 45 per cent more corn than similar land not in sweet clover the previous year.

THE SUGARED HONEY in your brood-combs will be wasted by the bees, W. P. F. Spray them with water, preferably hot; and as often as the bees lick them dry, spray again. [Right you are, doctor.—Ed.]

IF NECTAR CONTAIN 75 per cent or more of water, and honey contains 25 per cent or less of water, then for every pound of honey stored, two pounds or more of water must be gotten rid of. [This is about right.—Ed.]

"TO PAINT hives is not advisable, because painted hives favor dampness inside. At the most, paint only the front." That's an answer in the question-box of *Bienen-Vater*, p. 350. Doolittle and I would feel quite at home over there.

"SWEET CLOVER" is the title of a new government bulletin. It's fine. Also it's free. Send to your congressman or to the Secretary of Agriculture, Washington, D. C., for *Farmers' Bulletin* 485. Get your farmer neighbor to send for it.

J. SUPER REPORTS, *Schweiz. Bztg.*, p. 47, that he had a colony with many bee-lice. In the evening he shoved a piece of camphor under the bottom-bars upon a pasteboard. Next morning he drew out the pasteboard and found upon it about 200 dead lice, with no harm to queen or bees.

THE DISCUSSION as to bees throwing out excess of water while on the wing has been taken up in European journals. There is a general agreement with the views of Messrs. Root and Hand. Only a very few think the water is, perhaps, thrown out by the mouth. [We are glad to know that our views have been confirmed. European writers on bees are usually careful observers.—Ed.]

HOW MANY FIELD BEES in an average colony? Pf. Burghardt, *Leipz. Bztg.*, 24, says 13,300. Coel. Schachinger, same journal, p. 47, says 8000. It's of some consequence to have the matter settled. Who will help settle it? And, by the way, what is an average colony? [We should say the answer to this question depends on the locality, the kind of hive, and the methods used. A hundred different beekeepers, variously situated, might, therefore, give a hundred different answers.—Ed.]

IS THERE NOT some mistake about Father Langstroth living at Hamilton, O., as mentioned p. 232? In 1858 he moved to Oxford,

O., where he did, for that time, an immense business in Italian queens. From there he moved to Dayton in 1887, where he died Oct. 6, 1895, falling dead in the pulpit after preaching a sermon. One of the things I have to be proud of is that in 1873 he made a call on me while I was living in Cincinnati. [We know that he lived at the places you mentioned, and he probably lived at Hamilton. Who can tell us?—Ed.]

HERR BOHN, editor *Maerkischen Bztg.*, has for years followed the Swiss method of queen-rearing, and sounds a warning against it. It involves the American plan of starting cells, which he thinks sufficiently against nature to result in deterioration in the course of time. Any way, my plan of letting the bees start cells on their own combs is not open to this possible objection, and I can raise just as good queens, even if I can not raise so many thousands—*Bienen-Vater*, 322. [A great deal depends on who starts the cells. There is a right way and a wrong one. Some beekeepers can never make a success of any plan. A few do.—Ed.]

PASTOR FLEISCHMANN, *Ill. Monatsblätter*, 15, quotes the editor of *GLEANINGS* as estimating the annual consumption of a colony at 200 to 250 lbs., and says "neither estimate suits our conditions. With 30 lbs. of winter stores a colony comes through very well till the next harvest; and so large a consumption in summer is incredible, and colonies on scales show that it is impossible." I'll swear by the editor of *GLEANINGS*; but it might be a good idea to have some figures to settle the question. [We wonder if Pastor Fleischmann is taking into account the immense amount of stores it takes to rear brood. While 30 lbs. of winter stores will carry a colony through till the following harvest, yet, if it could not gather any more stores from the time bees are able to fly until the harvest, it would use up its 30 lbs. in short order if brood-rearing were started, long ere the beginning of the honey-flow. It would seem to us that Pastor Fleischmann is not taking into account the fact that in most localities, and probably in his own, bees in the spring and early summer are constantly gathering some stores—nearly enough to keep up brood-rearing, so that the 30 lbs. given in the fall will supplement the amount that they gather from week to week to carry them through till the harvest is on. Our estimate of 200 to 250 lbs. took into account not only the amount the bees had in the fall to go into winter quarters with, but the amount that they gather during the following spring and summer that is absorbed in brood-rearing. These estimates have been confirmed by a number of beekeepers on this side of the great water.—Ed.]

SIFTINGS

J. E. CRANE, Middlebury, Vt.

The Department of Agriculture at Washington has issued a bulletin on sweet clover. Let us see that it is well distributed among the farmers of the country.

I was not aware that the annual loss is as large in California as Mr. Chadwick states on page 101, Feb. 15. More and more I am led to believe that all the good things are not in one place.

If beginners in beekeeping who intend to do much business will cut out the editor's footnote on page 98, Feb. 15, and paste it up where they can always see it, and follow its advice in marketing honey, it will prove a perennial source of profit.

Those illustrations of J. B. Case's nucleus frame and top-bar, page 117, Feb. 15, are true to the real thing, and the best I have ever seen for their purpose. Mr. Case is a modest man, but is doing some good work along the line of queen-rearing.

That is what I call a capital idea, giving a whole number of GLEANINGS to bees and fruit, or largely so, as is done in the number for March 15, and then on top of that an offer to send free a copy to those fruit-growers whose names beekeepers may send to the office.

In talking with Mr. Geo. Demuth, of the Department of Agriculture, Washington, he said that the weather reports of the Weather Bureau might be of considerable value in fortelling the weather to those taking bees out of winter quarters in the cellar. This is both a new and a good idea.

I believe friend Byer is right, page 70, Feb. 1, in advising the use of a wax-press. If one has much wax to extract, it will soon pay for itself, although Mr. Poppleton, of Florida, with whom I have been stopping for some time, renders all his wax by means of the sun's rays. But the sun is about as hot here in January as in the North in July.

From conversations that I have held recently with Dr. Phillips and Editors Root and Tyrrell, it seems certain that not more than one bee-keeper in six or eight takes a bee journal of any kind. If we are to fight bee diseases successfully, shall we not make a strenuous campaign against the appalling ignorance of the beekeepers of the land as a strong force in controlling foul brood by increasing the circulation of such publications as are devoted to beekeeping.

Dr. Miller quotes, page 36, from *Deutsche Imker*, the remarkable fact that "a mixture of two honeys is darker than either kind separate." Funny! We have for years been mixing light honey with dark to improve the color of the dark honey, and thought it did. It must be that we are color-blind not to have seen that it made matters worse.

I was with Mr. O. O. Poppleton when he read that item on page 99, Feb. 15, regarding windbreaks. He thinks that, instead of a single item, the subject is of sufficient importance for a full article; for in wintering bees in the North, shelter from winds is of the utmost importance. We all know how much more we suffer from cold when working or riding in the wind than in a quiet atmosphere.

Dr. Miller, page 69, Feb. 1, says that he doesn't know why moths prefer old dark brood-combs rather than clean combs in sections. Let me suggest that most insects that lay eggs seem to know instinctively the food best adapted for nourishing their young, and doubtless the moths that lay eggs know that old dark brood combs containing more or less nitrogenous matter are far better food for their young than white section combs, for the larvæ of moths can no more be reared without nitrogenous food than the larvæ of bees.

Mr. Wm. T. Fritz, of Canastota, N. Y., writes to know if the Davis hive is like the Manum. I may say it is not, and that neither of them has any special point of interest for bee-keepers at the present time. He also desires to know if sections should be graded so as to make all in a case weigh the same. To this I would say it is not our custom to do so, for then some cases of heavy sections would weigh 25 or 26 pounds to 24 sections, while other cases would not weigh over 21 or 22 lbs. per case. Better make the cases average 23 pounds if possible.

A little boy wrote a composition on pins. He said that they are very useful. Girls use them to pin up their clothes, and they save a great many lives. The teacher inquired how they saved so many lives. His reply was, "By not swallowing them." Stopping for some time in a section of Florida where a large number of rattlesnakes have been killed, and where several persons have died as a result of being poisoned by rattlesnakes, I inquired as to the value of whisky, that all my life I had heard praised as a sure antidote for snake poison. I was told that its value for this purpose consisted in not swallowing it.

Beekeeping in the Southwest

LOUIS SCHOLL, New Braunfels, Texas

A GOOD HIVE-NUMBER WANTED.

Hive-numbers are good things, especially if more than one person looks after the bees. It often happens that something has to be done to a certain colony on the next trip to the apiary; and while the person there before knows the location of that particular hive, it is not an easy matter to tell to a certainty to others just which one it is unless they also are well acquainted with the location of all the hives. But how easy it is to say "No. 34," or any other, for that matter! and how easy it is to find that number on a hive, although we may never have been there before!

But here is a question: What are such numbers really worth? and what ought a good, durable, substantial hive number that can be put in place in a jiffy, changed from one hive to another in the same length of time, and one that will last a lifetime, cost? At the present time there is no suitable hive number on the market, that we know of; and if there were one, how much could the bee-keeper afford to pay for it? We have been thinking about numbering all our hives with a good hive-number; and as there are a thousand or more hives to number, the question above naturally crops out. Will some of those who know, therefore, tell us all about it? It will be highly appreciated at this time.

THE TEXAS OUTLOOK.

Not for many years have the prospects for a good crop been brighter than this spring. Although the winter was the longest and the most unfavorable for perhaps twenty years, according to many authorities who have kept bees and have watched the weather from year to year, the outlook is better than was really expected by many of us. There has been an abundance of rain since last fall, in most localities. As a consequence all kinds of vegetation are in great profusion and of luxuriant growth. This is indicative of a great mass of bloom yielding honey much more abundantly than even under average conditions. Judging from this, then, other conditions being favorable, the honey crop will turn out to be one of the best we have had for several years.

The bees, as a rule, are in good condition in spite of the long-drawn-out winter. While the unfavorable weather conditions were, perhaps, not felt so much in Southwestern Texas, reports from our correspondents are to the effect that the bees suffered considerably in the northern localities of the State. There were very few days favorable enough so that bees could work on the bloom that did make an early appearance; and many of the otherwise early flowers were delayed materially on account of the continued cool wet weather. In some apiaries this was so marked that the bees, which were rearing

brood at a rapid rate, and consuming their stores, had to be fed to prevent starvation. This was a critical condition in beekeeping, since the shortness of the stores at this time has a detrimental effect upon the progress of the colonies, in that much brood is subjected to starvation, and destruction by the bees themselves. Bees short of stores will devour not only large numbers of eggs but young larvæ at this stage of discouragement before the beekeeper may discover the actual serious condition prevailing. It is, therefore, of the utmost importance to watch all colonies closely and to supply necessary stores *before* such harm is done instead of waiting until the bees are found actually in a starving condition. To wait so long will require a longer time to become populous for the honey-flows, if, indeed, the colonies regain enough strength to gather surplus honey. The beekeeper who knew how to take care of such conditions properly and promptly is being repaid abundantly for his timely precautions.

Thus we find that the bees are in good or bad condition in various localities according to the ability of their owners to take proper care of them. The shiftless beekeepers with their "gums" are, as a rule, the heaviest losers. It is they who assert positively that the "worms" have killed their bees, when in reality they starved out before the wax-moth larvæ got into the beelless combs. The beekeeper here who prepares his colonies in the fall with more honey than they may need for winter will find little opportunity to worry about the bees wintering safely. If it is borne in mind that the bees really need more honey to spring them than to winter them, enough honey will be left to last well into spring. The honey not actually needed will not be lost, but, on the contrary, will result in rousing colonies of bees for the honey flows. This means a larger return in surplus honey—that which makes beekeeping a profitable business. The past winter has aided in teaching this lesson more thoroughly, and it is hoped that it will be heeded in the future.

Nine Virgin Queens Captured from a Colony Caught in the Act of Swarming

One sunny morning I was attracted by the piping of a queen in one of my hives. I went to investigate; and just as soon as I came up it began to swarm. It was a colony that had come from a swarm in the spring. I was surprised to find three young queens with it. I then went through the hive and found the original queen and four more queens hatched, and two more tore the caps off and ran out, so that made nine queens out. I caged them all and put the swarm back, and the colony stopped working. So I let one queen go, and the colony set it again. The colony is now in fine condition. It produced 96 lbs. of honey of good quality last season. You may be sure I made good use of the queens. They are the best I have. Two are ahead of any others in the whole yard.

ALLEN A. STRATFORD.

Kainga Tui, Orinoco, New Zealand.

BEEKEEPING IN CALIFORNIA

P. C. CHADWICK, Redlands, Cal.

All beekeepers in San Bernardino County who will assist in organizing a county club will kindly communicate with me at once.



Thousands of colonies were moved to the orange districts during the dry-weather scare. Nearly all of these will be returned to the sage-fields if they should give promise later of a fair yield.



Orange County is said to have the strongest county club in the State. Ninety-five per cent of the crop of the county is produced by those represented in the membership, which is organized into a splendid working body.



Our county bee inspector, Mr. Herron, openly defies the beekeepers to cause his removal from office. Those who think our foul-brood laws are adequate may have the job. I prefer to use my energy in getting a law that will leave the matter in the hands of beekeepers. *He will go then.*



While passing a white-clover lawn a few days ago I noticed about forty bees industriously working on the bloom. Within a short distance were quantities of orange blossoms fairly dripping with nectar. I offer no explanation, other than to suggest that the bees were "tender feet," just from the East, that didn't know a good thing when they saw it.



WARMER WEATHER NEAR THE COAST MAKES UP FOR THE FOGS.

This morning (April 24) there was a heavy fog-bank visible toward the coast, ten or twelve miles away. This condition is much more prevalent nearer the coast than here in the inland sections, giving us the advantage during the orange flow. This advantage, however, is largely offset by the warmer weather and more even climate under the influence of the ocean, nearer the coast, encouraging earlier breeding, which results in stronger colonies to work on the orange, whenever the weather is suitable.



HATCHING BROOD CAN STAND A LOW TEMPERATURE.

In spreading brood my observation is that it is wise to put sealed combs (hatching preferred) on the outer sides of the brood-nest; for if cold weather should drive them in dangerously close, the sealed brood will stand a lower temperature without injury than young larvæ. This was very forcibly impressed on my mind last season when, three days after having transferred a colony, I noticed bees hatching from scraps of brood-combs after having been exposed to a temperature ranging as low as 40 degrees. The loss would be greater if the sealed brood

should perish than if only eggs or larvæ; but if there should be danger of that, it would be better not to spread. Spreading is really never safe until one's bees can cover more combs than they have brood.



ORANGE BLOOM WITH SNOW ONLY THREE MILES DISTANT.

On April 12 my bees, three miles back in the foothills, and at an elevation of several hundred feet, were snowed under for a few hours; while in the valley below, oranges were blooming, waiting for the visits of the bees. Such a contrast is rarely equaled in this country. The entire week was very cold; the quantity of stores consumed was alarming; many colonies having an ample supply under ordinary conditions almost reached the starving-point by the end of the week following the storm, as the weather that week was so cloudy that the bees could take very few flights.



AVERAGE YIELD IN CALIFORNIA.

Wesley Foster's estimate, in *American Bee Journal*, of 50 pounds, extracted, per colony, as quoted by Dr. Miller, p. 223, Apr. 15, as being an average for specialists would not apply in California. I think 100 pounds would be a conservative estimate, taking into consideration that some years, outside of the orange and alfalfa districts there is practically a total failure. The average yield per colony, for Orange County, California, in 1884, was 700 lbs. per colony; in 1905 the yield for Southern California was 300 pounds average. These, to be sure, were exceptionally heavy-yielding seasons, but would figure largely in the average.



SAGE FLOW DOUBTFUL.

The rain question is no longer an unsettled factor in reckoning conditions on which the honey crop of 1912 will depend.

A local weather observer reports the storm from April 7 to 15 as being the heaviest for April in 28 years, nearly 4 inches having fallen during that period. This, added to what had previously fallen since March 1, makes 9 inches of late rain. The ground is thoroughly soaked to a good depth. At this writing (April 30) the sage seems still uncertain as to yielding; and after making close observations I can see no great hope of more than a light flow. There will surely not be any great profusion of bloom, for the growth does not indicate such. I may be wrong; but it seems to me that the late rains are forcing it out of its season. The result, I venture, will be little more successful than forcing certain other plants out of season. That there will be some bloom is quite certain; but many of the older bushes will bloom very little, if any; and whatever the yield may be, it will come late.

Conversations with Doolittle

At Borodino, New York

HOW TO ARRANGE SUPERS ON HIVES.

Among my many other books on bee culture I have "A Year's Work in an Out-apiary." I note that you advocate putting on two empty supers at the same time. I never tried that plan. What I want to ask you is this: How would it work to put the sections filled or partly filled with comb for baits in the top super, and none below? Would that not cause the bees to fill the top super first, and thus prevent all travel stain on the lower sections? I know by experience that it pays well to have one bait section in every row of sections.

In order to answer these questions I must "ramble about" to a certain extent. At the outset I wish to say that "A Year's Work in an Out-apiary" was written from an *out-apiary* standpoint. In the home apiary I rarely put two supers on any colony at the same time, unless that colony is a *very strong* one. The reason for this is that I am always on hand to attend to the wants of the bees in the home apiary; and if I had five out-apiaries and the home yard this home yard could have some of my attention at morning and night of the days spent in the out-apiaries, in addition to the whole of the sixth day spent at home. A quarter of a century or more ago we were firm in the conviction that no more super room should be given at one time than the bees could occupy at once. From this conviction, one, two, three, or four of the six boxes holding from six to seven pounds each, that the super of the Langstroth hive accommodated, were put on at first, little doors in the honey-board over the brood-chamber being fixed to close the entrances for each box when these were not on the hive. On scores of hives I put on only one of these seven-pound boxes at the start of the season; when, if this was occupied with bees, one more was added a day or two later, and a little later another, until all six were on. Now, any one will see at a glance that no out-apiary could be worked along this line.

It will also be seen how apiculture has progressed during the time since Mr. Langstroth first put his hive before the apicultural world. No "sections" were known at that time; and the term "baits," when first used with sections, had to be explained to the average beekeeper. With the arrival of sections came opposition, on the ground that a whole super must be put on at once; and to overcome this objection, Mr. Manum, of Vermont, a leading beekeeper of those days, clamped a single row of sections in a very light frame, so that in this way this principle of only a small amount of room at a time could be used with sections the same as had been done with the boxes. These light frames of sections could be put on one at a time till the top of the hive was covered and thus a "bridge" was made that finally spanned the chasm between the one-box-at-a-time theory and the putting on of a whole super of sections covering the whole top of the hive as we do to-day. After a while it was discovered that, by putting in

bait sections, one in each row, such as our questioner mentions, the bees could be coaxed into this whole super sooner than they would occupy one of the light frames, as made by Mr. Manum, without a bait.

The next step was to "stretch" the bees out still further; and so as soon as they were well at work in this first super it was raised, and an empty super of sections put under it. This caused the bees to commence work immediately in this empty super, so that they might not have an empty space between the brood below and their treasure house above. This became known as the "tiering-up plan." But many of us soon found that, unless the season proved to be an extra good one, or one long drawn out, we had from one-half to three-fourths of the sections worked in, unfinished at the end of the season, with only a small portion of our crop in marketable shape; while if we had not tiered up, our marketable product would have been twice as large. From this came the idea of putting the super of empty sections on top of the one the bees were at work in, and then, if more room was needed, the bees would "overflow" into this upper super, and work would go on equally well without danger of three-fourths of the sections being left in an unfinished state. There was also no danger of the "dish being bottom side up" if there should be an unexpected "rain of porridge." The objection to this empty upper super on top was that it allowed the heat of the colony, and especially of that from the bees at work in the first super, to pass up into this empty one above; and from this loss in temperature the bees could not work in the super next to the brood-chamber to as good advantage. But the observing ones found that the "crust bees" were able to keep the heat in the first super, when needed, by clustering in the beeways between the tops of the sections, so as to keep the heat just where they wanted it, so that the temperature of this empty super at the top was very little if any warmer than that of the outside air.

Turning to the main question of this correspondent, if one is at work at the out-apiary, and has a colony so strong that he thinks one super will not be sufficient until he comes again, the two are put on as given in the book. But I hear him asking, "Why not, as I suggest, put the super with the baits at the top?" Because the condition would then be almost if not quite the same as in the tiering-up plan. In other words, these baits would be so far away that they would not draw the bees into the supers at all; or if they did, the bees would commence in both supers at once, so as to have a connection between the bait combs above and the brood combs below, which would materially lessen the prospects for many marketable sections, especially if the season should prove to be a short or poor one.

General Correspondence

HONEY PRODUCED IN DISEASED APIARIES

Breeding from Queens whose Bees are Practically Immune

BY OREL L. HERSHISER

Brood diseases are rampant in many wide areas, and are, in each succeeding season, breaking out in localities heretofore free from disease. The annual increase seems to be in almost geometric ratio. That these diseases will soon overtake every apiarist in the country seems evident from authorized reports, notwithstanding all that official and private inspection and treatment has been able to accomplish in the way of staying their progress. Complete eradication of brood diseases, the country over, seems to be out of the question, and we may as well, and better, turn our attention to what is far more practical and profitable—namely, to becoming disease experts. That is what we must do if we are to continue in the honey-producing business as an occupation.

Much honey has been produced in recent years, in apiaries more or less affected by brood diseases. The percentage of such honey bids fair to increase annually for some indefinite time to come. This, at first thought, is not a pleasing condition to contemplate; but being confronted by that fact, the question for us to consider is, "With brood diseases present in the apiary can we profitably produce a crop of wholesome honey?"

We have been assured, by those qualified to advise, that the germs of brood diseases are in no way injurious to the human being. This is a most important fact. So important is it that, if the reverse were true, beekeeping as an occupation would speedily cease to be. So important is it, therefore, that this one item of knowledge may truly be said to be the cornerstone of the foundation upon which apiculture rests.

In the spring of 1909 European brood disease appeared in one of my apiaries. I could not believe it at first. Spraying of shade trees in Buffalo, within reach of the bees, had been in progress, and poisoning seemed to me a proper explanation for the presence of many dead larvæ in many colonies. However, when the summer was nearly over, an authoritative statement from Dr. Phillips, Washington Government Expert, convinced me that my apiary had been overtaken by the disease. It was too late to treat the bees that year. The disease had obtained a season's start. My first impulse was to destroy the apiary, root and branch. A request to our State agricultural department brought to my aid Messrs. Stevens and Stewart, two of our highly efficient State bee-inspectors. They gave me hope, and better counsel prevented the destruction of the apiary. Four colonies were given the

fall treatment by shaking upon combs of honey brought from another apiary that was not diseased. Fifty-eight colonies in this apiary were packed for winter that fall, several of which were the result of uniting weak diseased colonies. Fifty-four colonies were alive in the spring following, eight of which were weak. The first examination showed all but about half a dozen more or less diseased; and it was thought advisable to treat all that showed it. In my anxiety to get the disease under control as speedily as possible I was a little premature in treating the first eight colonies, which were the weaker ones, and lost four of them, leaving fifty colonies, spring count.

A plan of treatment embodying well-known principles, but varying from set rules in matters of detail, was thought to be sufficient, and, accordingly, all diseased colonies were treated. This included all but about half a dozen colonies of a fixed strain of Italian bees that has never shown the slightest trace of the disease. It may be remarked that, in my experience, confirming the statements of numerous experts in brood diseases, blacks, hybrids, and some strains of otherwise good Italian bees are particularly and possibly peculiarly susceptible to European brood disease, and are apparently predisposed to it. On the other hand, certain strains of Italian bees seem to be almost if not quite immune to it. Be this question of complete immunity of certain strains of Italians as it may, it is my personal experience that five or six colonies of Italians in this apiary never took the disease, which, for all practical requirements in apiculture, constitutes immunity. These Italian colonies were among the strongest and most vigorous in the apiary, and would certainly have carried the disease from the same source as those that were stricken. Other black and hybrid colonies that were equally strong and apparently as vigorous were badly diseased, and only prompt treatment saved them.

A part of the treatment decided upon was the selection of the queen of one of the Italian colonies that had not and did not become affected as the breeder of queens for requeening, and the substituting of queens thus bred for the queens of all colonies that showed the disease.

Being a novice in brood-disease treatment, and having a badly diseased apiary to operate, my crop of honey from it for the season of 1910 was only about 1000 sections and 800 pounds of extracted honey, and an increase to 60 colonies. In the fall not a trace of the disease was to be seen.

The spring of 1911 showed four of the sixty colonies of the fall before dead, and more than the average number of weak ones. Under the influence of settled warm weather they rapidly built up, and to all outward appearance were as healthy as any bees.

During the summer not more than six colonies showed any signs of disease. These were carefully treated, and later in the summer a careful examination showed only one colony diseased, which was a fine Italian, the queen of which I had purchased and introduced in July to a healthy nucleus, which showed that not all Italian bees are resistant to European brood disease.

This apiary was now short of brood combs, for many of them had been melted up the previous season in the process of treating the disease. Wishing to increase the number of these colonies, and to rear queens for my other yards, this apiary, during the season of 1911, was run for comb honey, queen-rearing, and increase. A carefully selected queen was used as a breeder (immunity to disease and good wintering being the main points considered). From this queen as a breeder every colony except eight was supplied with a young queen, the best of those substituted being used in other apiaries. The result of the season's work with this apiary was increase to 107 colonies, the rearing of a goodly number of queens for this and my other apiaries, and the production of 2500 sections of honey, some colonies finishing as high as six 32-section supers, or 192 sections. Only the stronger colonies were run for honey; the weaker ones were used for increase and queen-rearing. Considering the very unfavorable season, the showing of honey was very satisfactory.

The practicability of producing honey in diseased apiaries has *got to be* a foregone conclusion. It is the only thing to do for a goodly number of apiarists. There is no assurance to an absolute certainty that an apiary is without germs of disease, after it has once been infected; but that the honey from such apiary is wholesome for human food seems to be undeniable. There is just one simple direction to be followed in the production of honey from diseased apiaries: Use the queen-excluder on all colonies run for surplus honey, and extract no honey from brood combs. As an adjunct to this direction, let it be stated that the expert apiarist will not long have about his apiaries the brood diseases in noticeable amount, and but one or two seasons will suffice to make them free from disease to all intents and purposes.

There is surely a bright and hopeful side to this question of brood diseases. Has it not been in existence in Europe since the time "when the memory of man runneth not to the contrary"? And are not Europeans about as well supplied with bees as ever? It is not likely that the diseases will be more malignant here than in other countries. The brief manner in which some European writers of the past have referred to it and its treatment impresses us with the idea that it was not considered so very formidable. At any rate it has lost its terrors for me, and I regard it as a blessing in disguise. For me it has resulted in bees that are vastly superior in wintering, in handling, and in honey-gathering qualities.

What at first appeared to be a calamity is turning out to be a money-maker. As a result of it, the apiculturist of the future will be a bee *expert* instead of a mere beekeeper. From these view points it may truly be said, "Blessed be European brood disease."

Kenmore, N. Y.

MORE ABOUT TOBACCO HONEY

BY J. K. GOODRICH

Mr. E. H. Shattuck's article, "The Tobacco Industry in the Connecticut Valley," p. 162, March 15, was of much interest to me—first, because of the thousands of acres grown in this section; and the constantly increasing acreage from year to year. All opposition to tobacco as used by the human race seems to be of no avail, for the use has increased steadily up to the present time, and is still on the increase. But I have wondered how honey made from nectar gathered and stored from tobacco bloom could be wholesome for food. Not until the last few years has the tobacco plant been allowed to flower while in cultivation, so that tobacco honey is of quite recent production. The tobacco plant may be of interest to all beekeepers as being a new source of nectar for honey.

My boyhood days were spent in this locality, and the honey made by my father's bees was a necessary part of my lunch, which was composed of bread and butter and honey.

If I have been rightly informed, in my younger days the first tobacco grown in the town of Granby was a small plot on my father's farm in 1850. One of his employees suggested to him the raising of tobacco more as an experiment than otherwise, and the permission was granted; and from that time to the present the industry has developed to thousands of acres in a comparatively small area of Hartford County alone. New Tariffville, a few miles from Granby, is now the metropolis of the tobacco culture and business; eighty-four acres in one field alone is under canvas, and this field only one of many of the same kind on their plantation to-day.

When on a visit at Granby last summer, Mr. Shattuck very kindly gave me a large sample of tobacco honey for comparison with the honey stored by my bees in the fall season at Waterbury and Middlebury. I found it equal to the fall product gathered in my locality. I might say in passing, that I think there is no danger whatever of contracting the tobacco habit by eating the honey as one would by smoking or chewing the weed.

This plant belongs to the nightshade family (*Solanaceae*), the members of which resemble each other very much—as the potato, tomato, and egg-plant, all of which have a nauseous, disagreeable odor. The honey is dark, with a brownish cast in color, and there is an absence of a rank strong odor, so that it tastes and compares favorably with

the buckwheat product. Mr. Shattuck informed me that no disagreeable results followed the free use of this honey as an article of food by the members of his family.

I wish to say, however, that I was very much inclined to be skeptical as to its being more of what might be called a medical product than a food, like the honey from Brazil, some of which can be used as a medicine only, owing to the poisonous source from which it is gathered. But in this I am happily disappointed, as no bad qualities peculiar to this plant seem to be in the honey when ripened by the bees and placed under favorable surroundings after being removed from the hive. It would seem that this locality in the Connecticut Valley and adjacent territory with its broad acres of tobacco bloom between the buckwheat flow and the fall flowers would be what the buckwheat fields are to the Alexander apiary in New York, where hundreds of colonies are kept in one locality alone, with remarkable success in securing a honey harvest.

Waterbury, Ct., March 29.

PUTTING THE SWARM ON THE OLD STAND WITH THE PARENT COLONY BESIDE IT

BY DR. O. C. MILLER

A Canadian correspondent writes that in 1910 he fell upon a plan of management by which he got from a black colony 400 pounds extracted clover honey. The season was so poor in 1911 that he could not further test the plan, and he wants to know whether I think it will work. He thus describes the plan, which he says is a variation of the put-up plan given in "Fifty Years among the Bees:"

A colony in a regular eight-frame Langstroth hive had an extracting-super over a queen-excluder, and this colony swarmed. To the swarm, which we will call A, were given foundation-starters, and it was set in place of B, the mother colony. B was set beside A. The next day I put an excluder over A, on which I put a super of empty extracting-combs, and over this the super from B. When the young queen began to lay in B, I put B in place of A, put an excluder on B; on this excluder a super of empty extracting-combs, and above this the supers that had been on A. A was put on a new stand with its old black queen, which is five years old this year.

The first question that arises is one regarding the safety of the young queen when B is put in place of A, as she is a stranger to all the field bees that enter the hive. But being surrounded by a household of her own bees, she ought to be safe except in a time of scarcity, and she possibly might be safe then.

Instead of a variation of the put-up plan, you have a variation of the excellent plan of putting the swarm on the old stand, the mother colony beside it, and moving the latter to a new stand in a week or so. Your waiting till the young queen lays before moving the old colony to a new stand will, in a large number of cases, result in one or more afterswarms. You don't want that. I don't see what you gain by swapping

hives and brood when you make your last move. You certainly lose two weeks or more of hatching brood, for you take from your honey-hive hatching brood, giving in place of it brood that will not begin to hatch out for something like three weeks. In the long run you will probably do better to stick to the old plan.

This correspondent says further, that, when he gives a ripe cell to a queenless colony, the queen hatches out, but is lost on her wedding-trip; but if the bees rear a queen from the egg there is no such loss. I think it only happened so, and that in general he will find as many losses from wedding-flights in one way as in the other.

BEES MAY KEEP EGGS FROM HATCHING.

A colony swarmed, its young queen was lost, and three weeks from the time the prime swarm issued cells were started with eggs that I am sure were laid by the old queen. How long will fresh eggs keep? Editor Root says fresh eggs keep, if warm, only three days. Not in this locality: they hatch.

I don't know enough about the egg business to speak with authority, but I think there may be no unreconcilable conflict in the case. You say that eggs, if kept warm, will hatch in three days. Surely in the case you cite they were kept warm, and they didn't hatch inside of three weeks. You have good backing in saying they will keep long, for no less an authority than Dzierzon reports eggs being kept by the bees. If I remember correctly it was two or three weeks. But when Editor Root says they keep only three days there is not necessarily any contradiction, for the probability is that he is talking about keeping eggs out of the hive, away from the bees. That's the only way in which we are much concerned about keeping eggs.

Without knowing very much about it I think it quite possible that this is what may be found to be true: That, unlike hen's eggs, bees' eggs will not hatch by heat alone without the presence of bees; that bees have the ability to keep them without hatching for a time, and then hatch them afterward. I don't know whether that's true or not; but I do know that in the fall I find in the hive eggs and sealed brood, but no unsealed brood. The queen continues laying, but the bees stop hatching the eggs—or at least the eggs stop hatching.

Marengo, Ill.

GETTING ALONG WITHOUT QUEEN-EXCLUDERS

The Shape of the Brood-nest

BY GEO. SHIBER

On page 715, Dec. 1, 1911, is an article from Mr. Doolittle, on the use of queen-excluders. It is not often that my practical experience is much different from his—in fact, I nearly always agree with what he says on bee management. But I want to take an emphatic exception to what he says on the use of excluders in producing extracted honey.

He says, "And this brood which would easily go into one hive was scattered all through the combs of the two." Now, my queens never lay that way. I never knew of a case. The following is what I can expect from a colony in early spring: As soon as the bees have as many as four combs with brood, the shape of that brood-nest will be in the form of a sphere; and with a good queen, and plenty of pollen and honey coming in, that ball of brood keeps increasing in size until it reaches the outside combs.

We then put on another story of empty combs, and the queen will soon occupy this second story. And this is the way a queen will start in the upper story: First she will lay in the bottom part of the combs in this second story—in several of the central combs. The circle of egg-laying will be maintained, so that the center upper comb will have eggs extend higher than the combs on either side. After a few days this circle of brood will be higher in the second story, but sloping down as it goes toward the outside combs, preserving the spherical shape. I have never seen an exception to this.

About this time clover begins to yield. Another story is added, if needed; but the queen will never go into that unless she is a very exceptional layer. Of course this body is placed on top of the second story that the queen is partly occupying. A queen rarely needs more room than the two lower stories supply. (If this new story were put between the two stories which constitute the brood-nest it would make a bad mess, as then the queen and colony would be thrown completely out of balance, and abnormal consequences would almost surely follow, which would be decidedly unsatisfactory.)

By placing the body containing the empty combs on top it forms the third story. The honey which is coming in at a fair rate is placed first at the top and side of the circle of brood. After this space is occupied the bees will reach up into the third story with honey.

Where do the bees put this first honey in the third story? Never in the upper part of the combs, but in the bottom part first, and then gradually extended upward. (An exception to this, and it also applies to brood, is that, if there is a black comb in the center of the third story, and the rest of the combs are white, never having had brood in them, the black comb will be filled first.)

At this stage the queen and workers will ease up on brood expansion, and contraction will take place. The circle will gradually work down out of the second story into the first; so by the time the harvest is past there will be only a small amount in the second-story combs, and the bees will have filled the cells with honey as the brood has receded.

In view of the above I can not see how a queen could have brood "scattered all through the combs of the two" stories. Normally, bees do not scatter their brood or honey. It is always in a compact shape. At no time between spring and the end of

the basswood flow have I ever known a queen to desert the lower stories to go into the third when it was added. Later they will go up into the second or third story, however, and that time is toward the last of the buckwheat harvest.

If Mr. Doolittle had been talking about the flow from buckwheat I should have agreed, for at this time nine out of ten two-story colonies will have the brood-nest in the top story. If they have no excluder between, I suppose it is because it's warmer, at a time when the nights are cool.

This whole question, however, may be one of location; but my bees, when they have the maximum brood-nest, have it extend to the entrance. I have a pile of excluders in the shop, but I have not used them for several years. I like the present way much better; but one must manage rightly if he wants the best results.

Randolph, N. Y.

SWEET CLOVER IN CENTRAL ALABAMA

BY A. B. BROWN

I am prompted to say a few words in behalf of melilotus, or sweet clover, in view, if possible, of correcting some of the wrong impressions in regard to the plant. I wish to speak of it only as it is looked upon by the planter, the cattleman, and the beekeeper in this part of Alabama, where it grows luxuriantly on the lime soil.

The planter has used sweet clover for years as a land-redeemer, and to keep land (not in cultivation) from washing. Land that is practically worn out, after being seeded to sweet clover for three years, will produce good cotton again. Then, too, when land is poor and washed full of small ditches and gullies, if sweet clover is sown it will hold firm the washing banks, catching the wash of the soil, thereby filling up numerous depressions.

In this section nothing but unhulled seed is used. It is cheaper, and easier to get. For the best results the land is plowed and about two to three pecks of unhulled seed to the acre, sown broadcast. It is not necessary to harrow it in. The rain will wash sufficient soil over the seed. Sometimes a brush is run over the soil for the purpose of covering the seed slightly.

It is a peculiar fact that cattle not raised in the sweet-clover districts do not care for it at first; but they soon learn to like it, and afterward prefer the sweet tender bunches to the other vegetation of the pasture.

The sweet-clover soil (lime soil) of the South is not very extensive, consisting of a narrow strip across Mississippi and Alabama, with some sandy land mixed in, which has no sweet clover. In this section we find that it is a land-builder; excellent to sow in order to keep the soil from washing; fine for the pasture, besides a very good honey-producer, which in its favor have made it a friend and a benefactor.

Hayneville, Ala.



Apiary of Geo. H. Kirkpatrick, Rapid City, Mich., showing method of arranging the hives in pairs. Each hive stands on four cedar stakes,

HOW THE LOCATION AFFECTS THE HONEY-FLOW

Points to be Considered in Laying Out an Apiary

BY GEORGE H. KIRKPATRICK

Much depends upon the location of a beeyard. In the spring of 1909 I had an apiary located on a high altitude, a stretch of country known in this section as the "snow ridge." The bees of this apiary had been removed from the cellar April 14, at which time they were in first-class condition, the clusters occupying seven to eight spaces in ten-frame hives. The nearest water was one mile distant. By June 10 the colonies were reduced by one-half, and I received no surplus. The bees were left for two seasons in this location, and were reduced to a worthless condition. The location was the principal cause of the failure.

Note the difference: At the same date in 1909 I had an apiary 20 miles north, located on a stretch of land lying between Grand Traverse Bay and Torch Lake. The soil is a heavy clay, wet and springy, and there is water in every horse-track in early spring. Soft maples and pussy willow are plentiful. The bees at this apiary had wintered poorly, being reduced to very small colonies while in the cellar. I carried them out April 16; but with a sheltered location, plenty of

water, pollen, and honey-producing plants near by, they bred up to good colonies and gave me a net average of 110 pounds per colony, spring count. The bees in the two apiaries had the same care, each receiving the same number of visits.

LOCATING THE APIARY.

In locating an apiary there are several points to be considered. First is the pasture. We must seek a location where there are hundreds of acres of honey-producing plants. In this locality we seek to find raspberry and milkweed, for on these two plants we depend for our surplus honey. Then for early pollen and nectar we must have maple, elm, pussy willow, dandelion, and fruit blossom.

THE ADVANTAGE OF SHELTER.

The best locations are usually found in valleys a mile or more in width, for such places are warmer in early spring than the higher lands. A spot of ground should be chosen in a sheltered nook; a clump of timber, a thicket of second-growth timber, or a ridge of hills on the north and west of the apiary will prove valuable.

The ground should be nearly level, but a gentle slope to the south or east is preferable.

THE HIVE-STANDS.

I make my hive-stands of cedar timber sawed into 16-inch lengths, and split into



Annual convention of the Southern Idaho and Eastern Oregon Beekeepers' Association held at Caldwell, Idaho, Feb. 9, 1912.

stakes about 2 inches square, which should be pointed at one end. Four hundred stakes are required for an apiary of 100 colonies. To arrange the hive-stands I go to one corner of the yard; drive two stakes 20 inches apart. I then drive two similar stakes at the further end of the yard, and stretch two lines between them, 20 inches apart. Then beginning at one end I drive four stakes, forming a level square 16×20 inches. I now move forward two feet and drive a second group of four stakes. The next space is six feet, so that the hives in the row will be in pairs. See illustration.

When I have reached the further end of the yard I take up the lines and arrange for the second row of stands, leaving a space of 12 feet between the rows.

SPRING PROTECTION AND SECURING WORKERS FOR THE HARVEST.

It is possible to have a good flow of honey and yet secure no surplus. The only protection I give my bees in spring is a quilt and tarred felt placed over the brood-frames and under the cover. Soon after the bees have a flight I look each individual colony over and note its condition. The small colonies are contracted to six combs by the use of division-boards. I make sure that all colonies have sufficient sealed stores to carry them safely through until May 1, when I get busy. At that time I make it my business to see all yards once each week. Just as soon as the brood-chamber becomes crowded with brood and bees I place over all such colonies a full-depth super filled with worker combs. The queen will soon

enter this super, and in a few days it will be filled with brood. When the bees are hatching freely in this super, which will be about May 25, I begin to build up the smaller colonies by drawing combs of hatching bees, and giving them to the small colonies. If it happens the small colony is so weak as not to have at least three combs of hatching bees I then exchange a comb of such bees with them for a comb of eggs. The eggs can be given to a medium-size colony.

It is my practice to have all colonies filling a two-story eight-frame hive with brood and bees by June 10, for at that date our harvest from raspberry begins. I now confine the queens to the lower body of the hive. To do this I remove the cover, give the colony a few puffs of smoke, thus driving the bees and queen below. I remove the super and place a queen-excluder over the hive-body. Over this I set a super filled with extracting-combs. I now look over the set of combs I smoked and removed; and if I find the queen I catch her and run her in at the entrance; then I put these combs on top of the extracting-combs. The colony is now three-story. Should the flow be a moderate one, the colony may not require any more supers; but if it should be fair to good, a third super will be required. Should more storage space be required I give it either by adding a third super or by extracting. If by extracting, I extract only capped honey. It looks nice to see hives tiered up with four or five supers of honey; but I think the bees store best when the hives are not more than four stories high.

Rapid City, Mich.

SOUTHERN IDAHO AND EASTERN OREGON CONVENTION

Shaking Foundation out of the Paper in which it is Packed

BY E. F. ATWATER

The annual convention of the Southern Idaho and Eastern Oregon Beekeepers' Association was held at Caldwell, Idaho, Feb. 9, 1912. There was a very good attendance of representative beekeepers, owning, in the aggregate, many thousands of colonies.

Perhaps nothing particularly new or valuable was brought out in the discussions, although the need of thoroughness in the eradication of foul brood was particularly emphasized.

The officers of the association for the year 1912 are shown in front of the group, seated. President, W. H. Pennington, the second from the right, is as practical a producer of extracted honey as any man in the northwest. Vice-president J. E. Lyon, long-time comb-honey expert of Longmont, Col., now of Idaho, is seated at the left (his daughter next to him), while at the right is R. D. Bradshaw, who is, perhaps, not behind the late E. W. Alexander in the successful operation of huge apiaries of 500 colonies and upward, in a single yard.

REMOVING PAPER FROM PACKED FOUNDATION.

One of the most tedious tasks that fall to the beekeeper is removing paper from foundation. Personally I have never seen any reason for the sheet of paper that goes with each sheet of foundation, unless it may, perhaps, serve to prevent breakage by imparting a certain cushion-like quality to the pile of foundation within the box. Certain-

ly I have shipped and received several hundreds of pounds of foundation not so papered, without loss.

But as the makers of the improved process foundation will paper it, a quick method of removing the paper is greatly to be desired, and such a method the writer originated several years ago, and has used since then with much satisfaction and saving in time. Perhaps the cuts and description will render it clear.

A pile of the double-papered sheets of surplus foundation is taken in both hands, as shown in Fig. 1, and shaken lightly, when the sheets in the lower part fall out. Now the lower part of the paper (now free from foundation) is seized and the remainder of the foundation shaken out as shown in Fig. 2. The foundation, free from paper, is now lying on the table, with the paper remaining in the hands, as shown in Fig. 3. The foundation must be cool, but not so cold as to break or crack easily. I see no reason why a similar method could not be used with brood foundation, if the makers would only make the paper about nine inches wide, so as to provide a place where it could be held while shaking out the foundation.

It is only fair to admit that I find some foundation that can not be freed from paper in this way—perhaps due to the fact that it has been packed so tightly in the box, or while too warm, so that the paper adheres tightly to the wax. Surplus foundation should never be papered by wrapping or folding each alternate sheet in paper, as has been done by some makers; for if packed by that plan, then there is no way to remove the paper except by the slow and tedious hand process, one sheet at a time.

Meridian, Idaho.



Wholesale method of removing paper from foundation.



MEMBERS IN ATTENDANCE AT THE CALIF

Row 1, left to right. 1, Mrs. A. B. Shaffner; 2, Mrs. G. J. Lynn; 3 —; 4 —; 5, H. Perkins; 6, A. Seligman; B. G. Burdick; 16, A. B. Shaffner; 17, W. H. Allen; 18, M. Andrews; 19, Frohlinger; 20, Emerson; 21, Corry; 5, Mrs. Andrews; 6 —; 7 —; 8, Wilder; 9 —; 10, Maden; 11 —; 12 —; 13 —; 14 —; 15, Ballet; 16 —; 17, Pleasant; 31, Mrs. Martin. Row 3. 1, Bennett; 2 —; 3, Delos Woods; 4, Maxfield; 5, Hatch; 6, Mercer; 8 —; 9, Honey

WHY CERTAIN SWARMS DO NOT CLUSTER

The Story of "Giantess," of Forty-five Years Ago

BY A. I. ROOT

On page 284, May 1, is an article entitled "A Swarm that did Not Cluster." By some oversight a footnote was not added, to the effect that, when a colony of bees select a home before swarming, they seldom if ever stop to cluster on a limb in the orthodox way. My first experience in this line may be remembered by some of our oldest readers. After getting that \$20.00 queen of L. L. Langstroth I reared a large number from her the following season. One in particular was so very large, and had such an extremely prosperous colony, that I called her "Giantess" as a bit of pleasantry. Well, when white clover opened, my Italian bees were going in great droves off toward a piece of timber in the northeast. They not only made a great ado in the morning when they started, but there was such a roaring overhead that people thought my bees were swarming; and one morning I started out to find what called them off in that particular direction. I think I had a hive on scales at the time that was showing large daily gains. Sure enough, there were great fields, with an unusual crop of red and white clover, and every thing was going on swimmingly and to my great delight, until one bright morning in June, when clover was just doing its best, a great swarm issued from the Giantess' hive, and made a beeline without any preliminaries, circling off to the northwest.

I was so vexed and put out by losing this great swarm and that valuable queen that I declared I would have her yet if it was a possible thing. Of course my friends and

acquaintances who had laughed at me before on account of my enthusiasm laughed harder still, and joked about chasing after runaway bees. I hired an experienced bee hunter, the one mentioned in our ABC book; and as soon as the honey-yield was partly over so he could get the bees to work on "bait" he located the colony in the top of a large oak-tree a mile away in my father-in-law's woods. The tree was soon cut down, and the Giantess put into a hive and brought back home. This whole matter was given in GLEANINGS at the time, and numerous letters were received to the effect that bees often select a locality before swarming. Quite a number of careful observers had seen them going out and in holes and hollow trees, quite busy for several days before the swarm actually took its departure, led by the queen. The case mentioned in the communication referred to was one of this kind. The bees had made all arrangements for migrating to the new domicile by repeated visits each day for several days before the swarm came out; therefore there was no need nor sense in their clustering *anywhere*.

ARE WE READY FOR IMPROVEMENT OF STOCK?

Does it Pay Now?

From time to time articles appear in the bee papers on the desirability of breeding bees, or suggestions as to methods where this may be done. There seems to be practical unanimity of opinion that, if we could but control matings, the bees would be vastly improved, and that the beekeeping industry would be benefited beyond our fondest hopes. That bees could be changed



MEMBERS IN ATTENDANCE AT THE CALIFORNIA SHEEPERS' CONVENTION, LOS ANGELES, FEB. 6-8.

Row 1, left to right. 1, Mrs. A. B. Shaffner; 2, Mrs. G. J. Lynn; 3 —; 4, —; 5, H. Perkins; 6, A. Seligman; 7, M. A. De Seflem; 10, Metcalf; 11, Mrs. Wiggins; 12, M. H. Mendleson; 13, J. W. Ferree, Pres.; 14, Ralph Benton; 15, B. G. Burdick; 16, A. B. Shaffner; 17, W. H. Allen; 18, M. Andrews; 19, Frohlinger; 20, Emerson; 21, Corry; 22, Schuchman; 23, B. Shaffner; 24, —; 25, —; 26, —; 27, Kimball; 28, J. K. Williamson. Row 2. 1, —; 2, Naylor; 3, Lynn; 4, Andrews; 5, Mrs. Andrews; 6, —; 7, —; 8, Wilder; 9, —; 10, Maden; 11, —; 12, —; 13, —; 14, —; 15, Ballet; 16, —; 17, Pleasant; 18, —; 19, —; 20, Moffat; 21, —; 22, —; 23, —; 24, —; 25, —; 26, —; 27, Mrs. Crane; 28, Mrs. Shaffner; 29, Mrs. Blocker; 30, Mrs. Honeey; 31, Mrs. Martin. Row 3. 1, Bennett; 2, —; 3, Delos Woods; 4, Maxfield; 5, Hatch; 6, Mercer; 8, —; 9, Honey; 10, Larr; 11, —; 12, Chadwick; 13, —; 14, Sweeney; 15, —; 16, Battery; 18, —.

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and improved may be accepted as certain in view of the marvelous changes that have been made in plants and other animals.

The present article is written anonymously, for the reason that the thoughts herein expressed are not the opinions of the writer, but are merely questionings that have come to his mind. It[†] would be a terrible blow to be credited with believing every doubt that may arise in one's mind.

Let us suppose a case. Two men in the basswood section of Wisconsin are engaged in producing comb honey. One has 150 colonies of fine stock which he is constantly seeking to improve, and actually *is* improving, by selecting his best queens as breeders. The other has 250 colonies kept in good condition; but he spends no energy or time in breeding. Assuming that the two men are identically situated and similarly equipped in apparatus and experience, and that they spend the same time in the apiary, will the first get 66 $\frac{2}{3}$ per cent more per colony, and harvest as large a crop as his neighbor with the same labor?

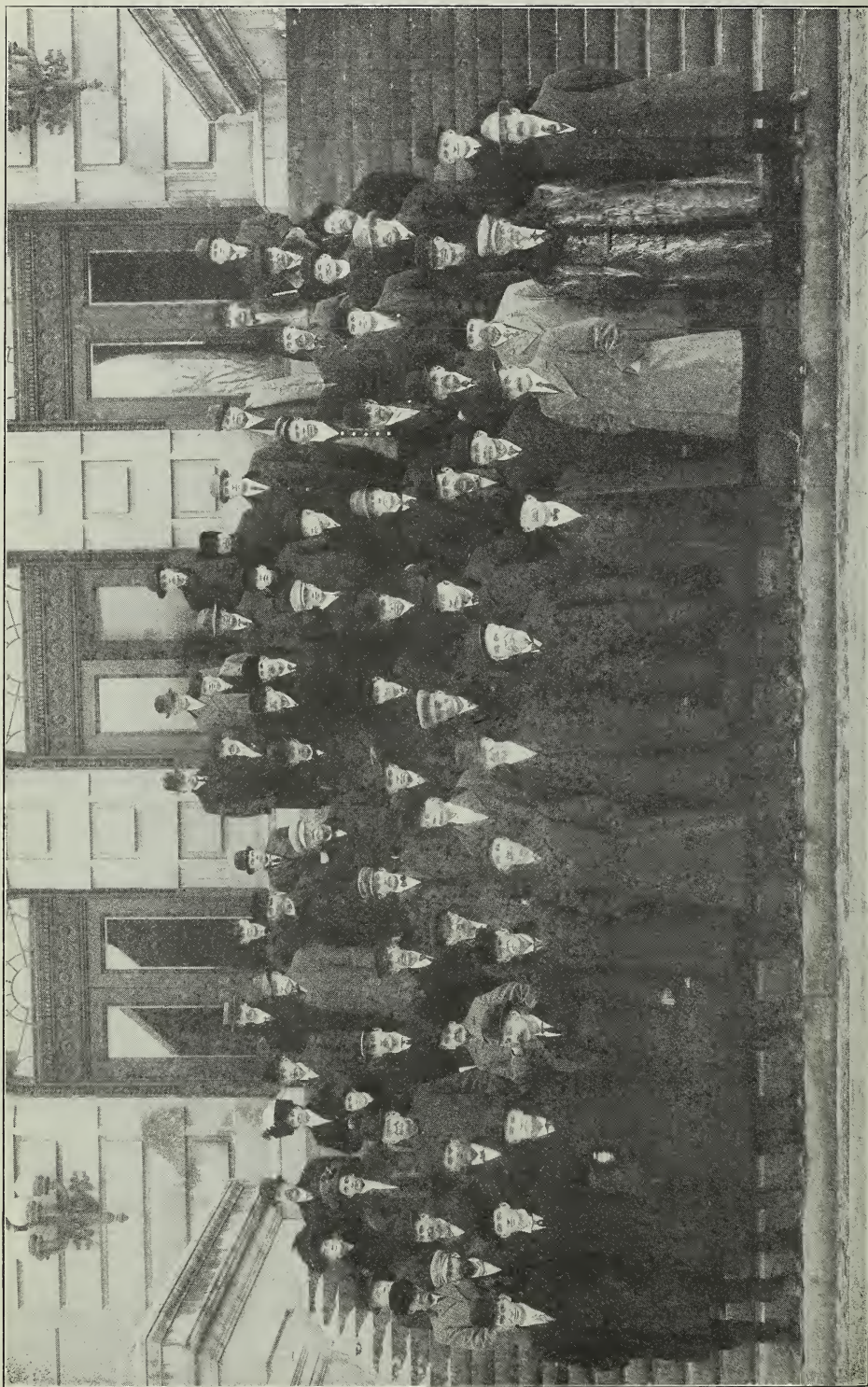
Another case of A and B may be supposed. A is a breeder of fine bees, and maintains an apiary in Southern Michigan. He runs 200 colonies for extracted honey, and values his colonies at \$10.00 each because they are of superior stock. They have actually cost him that in time. B has his \$2000 in cash (and as much ability as a beekeeper as A), and goes to Kentucky to buy cheap bees. Five hundred colonies ranging in price from \$1.00 to \$2.00 in box hives are shipped north into a locality exactly comparable to A's. Coming as they do from further south they are stronger at the beginning of the clover flow than those in A's apiary. At the end of the supposed good season, A has a nice crop of honey. B extracts all the honey in

his colonies, melts up the combs, and burns up the boxes and poor hives which were used as brood-chambers. The wax is worth at least \$500, and with that start does it seem likely that A can close the season with as much cash as B has, over and above his original capital? If A clears \$10.00 per colony, it is necessary for B to clear \$4.00 plus the cost of the colony, and minus what he gets for the wax. It is a safe bet that A will work as hard requeening his prize apiary and carefully manipulating his colonies as B will with his 500 wrecks.

I have (supposedly) a fine apiary in Central New York. I must leave at least 30 pounds per colony for outdoor wintering, which is worth, at a low estimate, \$3.00. I can buy bees in Pennsylvania, and move them north for \$3.00 per colony in the spring; and on account of the more advanced season in Pennsylvania they will arrive actually stronger than I can get my own. If I kill my colonies after the honey-flow I save at least \$3.00 per colony, and get the wax. I eliminate winter loss as well as expense, and have nothing to worry me in the winter except my bank account.

Being nomadic I also own a string of apiaries in California. These too are composed of supposition colonies. I must leave 40 or 50 pounds to get bees through from one flow to the next. All around me are men who do not know what bees are worth. Shall I melt up my combs and buy new colonies next year and sell that honey for \$2.50 or more, and the combs for \$1.50?

My Uncle Tobias has an apiary of 100 colonies in Northern Indiana. His location would support more colonies, or he can improve his stock so that the same number will cover the territory. He probably gets on an average 75 per cent of the nectar.



New York State convention, held in January, 1912, at Syracuse, N. Y. A partial report of this meeting was given by R. F. Holtermann, page 177, March 15.



Dr. L. A. Simmon and his swarm controller connecting the entrance of the colony being treated with the "annex."

Will it pay him to increase or to breed to get the other 25 per cent? Not Uncle Tob. He is starting another apiary of 100 colonies to get another 75 per cent with about the same labor.

The point of all this is, are we ready for improved stock? Is it practical in the present undeveloped condition of the beekeeping territory to spend time on intensive beekeeping? There is more to this than breeding, for the same suggestions apply to many of the "advanced" manipulations. Much of the above isn't true, but it may be worth thinking on some winter evening.

Moral.—Mow the grass in your apiary if you wish, but don't wear it out by walking on it.

HOW TO CONTROL THE SWARMING IMPULSE WHEN ONCE ESTABLISHED

A Continuation of the Discussion Started on Page 137, March 1

BY DR. L. A. SIMMON

Every practical beekeeper knows the difficulty in controlling the swarming fever when once developed. Whatever method we employ must have for its object the gratifying of that desire in order to eliminate it. To illustrate the strength of this impulse, and the tenacity with which they cling to the desire and determination to swarm, I will cite the following example:

I had one colony that was used as a check in experimental work, that was not provided with the swarm-controller, but had abundant super room. This colony developed the swarming impulse in July. I cut out all queen-cells and depleted the working

forces by removing part of the brood, replacing with full sheets of foundation; and yet, about every two weeks I would find a new crop of queen-cells in the hive. On Sept. 19 I swapped queens with a colony whose bees had never swarmed. To day, Oct. 28, there are nine ripe queen-cells in this hive with the swarming queen, while the other hive, where queen-cells had been the rule for three months, but now presided over by a

non-swarming queen, is breeding well and has ceased to build queen-cells. This experiment would indicate that in this case the swarming impulse lies with the queen. It is not probable, however, that the queen always takes the initiative, for there are a number of auxiliary contributing causes that have their share of influence at times; and in order to check those influences they must be gratified, or, as in the case above cited, they will continue.

In any case, where adequate controlling measures have not been installed in time, and queen-cells have made their appearance in the hive, adjust your hives as seen in the cut. The right-hand hive is the cell-building colony. The left is the annex, which is filled with full sheets of foundation. The swarm-controller, which is attached to the annex, must have the rear chamber of the controller closed between the two hives by means of the slides, and the shutter at the back. The bees now have access to the annex through the front vestibule. This arrangement should be made two or three days previous to further manipulations, so that the bees will become acquainted with the new entrance, and have time to investigate the annex. When the queen-cells are nearly ripe, open the hives about noon; and after removing two of the frames of foundation from the left side, transfer two combs of honey and sealed brood with the queen from the right side to the annex on the left. Now close the entrance of the old hive leading into the front vestibule of the controller, and at the same time open the entrance of the annex communicating with the front vestibule. Next open the regular entrance of the old hive, or the one at the opposite end from the controller. The bees will now



Sweet-clover hay cut with a mowing-machine, and raked into cocks for curing.

take their flight from this new entrance, and return to the common entrance of the swarm-controller, and enter the annex, or hive on the left, where they find their queen and the conditions that satisfy the swarming impulse; viz., a new hive, combs to build, and relief from a crowded house. The supers should now be replaced, one over each hive.

Two courses are now open in dealing with the queen-cells in the old hive. They may be cut out and destroyed, or placed in nursery cages to be utilized in making further increase; or one of the choice cells may be left to hatch and become fertilized. If the first plan of removing all queen-cells be adopted, cells will require to be cut out again in eight days. The old colony will then be without material from which to rear a queen, and the entrance to the swarm-controller on the side next to the old hive may now be opened, and the regular entrance, or the one at the back of the hive, closed, compelling the bees again to work through the controller. Both divisions are now working from one common entrance; and, being of the same family odor, they will very soon intermingle; and, finding their queen on the left side in the annex, most of the bees will return to her, and the original conditions of the hive will be re-established, minus the desire to swarm, which has been gratified and eliminated.

Having two sets of combs now instead of one, the select combs are placed with the queen, and all others stored in the annex, where enough bees will remain to care for any surplus thus stored. If it is desired to save one choice queen-cell in the old hive

the same process of division is employed as above; and when the young queen is fertilized, having taken her flight from the extreme right of the old hive, this entrance is now closed, and the entrance into the swarm-controller opened. The two colonies now work from one common entrance, the front vestibule of the controller. After a few days place a queen-excluder over the old queen in the annex, and on top of the excluder an empty hive body. Transfer all the frames with their adhering bees and young queen into this empty super, over the excluder. Fill the old hive with frames of foundation, and allow it to remain as annex, and place all supers over the queens. We now have a double-decker with two hive bodies, two queens, and two supers, as seen in the cut. If it is not desired to work the two queens in this way, one of the divisions may be moved to a new location. If this course is chosen, both colonies should be sufficiently strong, and equalized before separating.

It will be observed that the first process controls the swarming impulse without making increase. The second process doubles the breeding capacity of the hive; but all the bees work together in common, storing in the one set of supers. The third plan divides permanently the working force, and is one method of making increase. The bee-keeper will be governed by conditions present as to which course to pursue. If the swarming impulse comes on during a great honey flow the first plan is obviously the one to employ as this will give the least possible break in the working forces. By placing a super over each division for the eight

days required, the bees will store nearly the same amount of honey as when working together.

Auburndale, Fla.

To be continued.

SWEET CLOVER AS A HAY CROP

BY FRANK COVERDALE

When I first began to grow sweet clover I had little thought of ever using it for a hay crop; but as time passed I began to see that it would answer very well as a dry feed. We experimented with one patch, and, contrary to what I had expected, a fine hay crop of superior quality was secured. This first field that we tried had been sown about the first week in May, and had been pastured to hogs until August, when all hogs were taken off. By October 10 the sweet clover stood 22 inches high, and then the mower was started. Just as soon as the hay was well wilted (but not dry enough to put in barns) it was raked into winrows and shaped into well-formed small cocks. These cocks, by the way, were just large enough so that they could be thrown on the rack in one good fork-load all at one time. This avoided scattering the leaves, which are as valuable as so much wheat bran. From this the reader will see the importance of putting up the hay so that it is not too dry when handled. All the handling, in fact, should be done while it is green and tough, when it can be gotten into the cocks before any leaves will be scattered around. It should stand in cocks until it is sufficiently cured to keep in the mow. We have always found that this clover has kept well when managed in this way.

White sweet clover is the worst of any of the clovers that I know of, to scatter its leaves when overdry; and the leaves being thick and meaty are surpassed by those of no other legume. A dairyman is lucky who has a good winter supply of first-year sweet-clover hay for his cows.

The cocks referred to will stand many rains and still be very good feed. Sweet clover sheds water better than common clover, and it has a smooth stem. The common red clover, because of its hairy stem, holds moisture, and quickly turns black and becomes unfit for feed. I have been happily surprised to find that this first-year hay cures the nicest of any that I have ever made.

This coming fall we shall have fully forty acres of this kind of hay to make, and we intend to use a side-delivery mower; and, when it is sufficiently dry, to use a hay-loader. We think we shall not have much loss when we follow this plan; and when there are large fields this latter plan is much faster than any other. There should be two wagons, one loading and the other unloading at the barn.

I know of no other clover that can be depended upon to make a good hay crop the

same year as sown. It has often been tall enough to mow in July; but at this time it would be very dangerous to mow it unless care were taken; for as yet there are no crown sprouts started; and if one mows the clover close to the ground in July, much of it will be killed outright. On this account, if one wishes to mow the first clover in July, or before the crown sprouts start, the machine must be set so as to cut high enough to leave stubbles that have a few leaves to make a start for the next crop. When the crown sprouts are started, the mower may be run close to the ground with perfect safety. These crown sprouts on the first-year crop will be seen close to the roots after removing about an inch of dirt. This is the reason, by the way, why this clover will not winterkill. The crown sprouts are about an inch below the surface of the ground, so that a covering during the winter is a certainty—a point of vast importance to one who is depending upon this clover the coming season.

MAKING HAY FROM THE SECOND-YEAR GROWTH.

Handling the second-year growth is, perhaps, a more difficult problem, as the clover gets very rank early in the season before good curing weather arrives. In this respect it is just like alfalfa. We have never dared to try and cure the hay until along in June; but at the same time every effort that we have made has been successful; we have never yet made a forkful of poor sweet-clover hay. With the improved variety of white sweet clover that we now grow, I am not sure but that we might cure the hay even as early as the 1st of June. If we could do this, the problem of making hay from second-year's white clover would be solved, and two good cuttings could be easily made during the second year, and a seed crop secured late in the fall.

There are many ways in which this clover can be handled for hay. One plan, which is very successful and easily carried out, is to wait until the clover is in bloom, and just beginning to form seed. This is just before the leaves begin to show yellow. While the foliage is still on, go over the field with a self-binder and set in shock rows, two and two. These bundles will cure nice and green, and will dry very quickly. They should be hauled and stacked like oats until winter, when the bands may be cut and the bundles thrown in the mangers for any kind of stock. It will keep perfectly dry if well stacked, and will make very satisfactory feed. The binder should be run high enough to leave behind a stubble which contains a few leaves, otherwise it will die out. If the leaves are left on, a nice crop of seed of excellent quality can be cut later in the fall.

Another plan is to pasture the second-year clover with some kind of live stock until late in May or the first of June. The hay will then be just about right in good hay weather, and can be made just as though it were a first-year crop. The stubble should be left high, as shown in the illustration.

It will be seen that some of the clover in the picture has not been cut well. In explanation, I will say that, just before we started to cut this hay, a new pitman arm had been put on the mower, and it drew the sickle too far one way, and hardly cut at all on the return stroke. If this had not been the case, there would have been a smooth top.

The cocks of hay shown were out in two showers, but nothing was colored except the outside. The middle cured to perfection, and went to the barn as green as tea leaves. This field was mown when just coming into bloom, and the stubble grew up and made a seed crop.

The reader may be interested to know that clover of any kind in this part of Iowa was very rare last year, as severe drouth had killed all other clovers except a little alsike here and there. Sweet clover grew as though there had been no drouth.

Delmar, Iowa.

THE WHITE FLOWERS OF NORTH AMERICA

BY JOHN H. LOVELL

White flowers are most common in our flora as well as in that of Europe, and 955 species occur in northeastern America. They contain no pigments. Like the snow and powdered glass they owe their color to their optical properties—that is, to the reflection and refraction of the rays of light by the minute cells of which they are composed. To produce a vast number of blossoms must, of course, tax the energies of a plant, and the absence of pigments lessens this expenditure. Like white leaves, I believe that white flowers are the result of retrogression or degeneration. Any bright-colored flower may occasionally revert to white. Whatever impairs the vigor and vitality of the plant, as cold, impoverished soil, injury to the roots, or continued self-fertilization, will cause the floral hues to become paler, or change to white. I once transplanted a scarlet poppy when in bud, and the flowers became much smaller, and changed to pure white. White flowers are most common in the cold days of May, and gradually become rarer toward autumn. In the arctic climate of Spitzbergen the flowers are chiefly white, and there are few yellow and red, while blue appears to fail entirely. In East Greenland the flowers are likewise chiefly white.

On the other hand, whatever stimulates the growth of a plant, as bright sunlight, strong manures, or crossing, increases the brilliancy of the flowers. When lowland white flowers have been cultivated in the intense light of alpine heights they have in some cases become red. An application of nitrate of soda will increase the brilliancy of a flower; and tulips, when treated with strong manure, flush and lose their variegated colors. The brightness of the floral hues is also increased by crossing.

From this point of view we can under-

stand why white flowers are most common in nature, and why they are truest to name under cultivation. Naturally florists find that they can develop any desired color variety from a white flower more easily than from one already containing pigments.

Nature is an excellent economist. Trees and shrubs whose fruits are edible by man or birds usually produce their blossoms in boundless profusion, and they are almost invariably white, or nearly so—the two most noteworthy exceptions being the peach and the huckleberry, which have red or reddish blossoms. Among trees are the apple, pear, plum, cherries in variety, the quince and the orange; while among shrubs are the blackberries, raspberries, blueberries, the hollies, cornels, viburnums, and thorn-bushes. All of these species contain nectar, and are visited by honey bees.

There is nothing more beautiful in the floral vegetation of the world than an apple orchard laden with expanding blossoms. The great masses of flowers form billowing banks of whiteness, tinged with rose and flecked with the vivid green of the unfolding leaf-buds, from which exhales the well-known sweet fragrance of the apple blossom.

Spring walks abroad in all the fields to-day:
Her touch has left the apple orchards white;
The baby buds that waited for the May
Have shaken out their petals overnight:
Against the rugged boughs they softly press,
Weaving in the mantle of their loveliness.

Spring walks abroad with songs of life and cheer:
A thousand gifts she joyfully bestows;
But all her fairest handiwork is here
Where orchards toss their drifts of scented
snows.

Alfred Russel Wallace, who spent many years of his life in exploring the vast forests of the Amazon and the islands of the Malay Archipelago, declares, "I have never seen any thing more glorious than an old crab-tree in full blossom; and the horse-chestnut, lilac, and laburnum will vie with the choicest tropical trees and shrubs." The cornels and viburnums are justly ranked among our handsomest shrubs, for the great clusters of white flowers transform the whole shrub into a huge bouquet.

The largest tree flowers known belong to the magnolia. One southern species has a white flower with a purple center which measures ten inches across. "Their effect in early spring is grand beyond description, illuminating the whole landscape and filling the air with rich perfume." Of the five northern species, four are white and one is greenish yellow. Magnificent white flowers are likewise displayed by several species of pond lilies; but very frequently white flowers are of small size, and conspicuousness is gained by their aggregation in masses.

Small densely clustered white flowers standing in the same horizontal plane, and affording a convenient landing-place for insects, are very common in the mustard, saxifrage, carrot, cornel, honeysuckle, and aster families. This type of flower cluster is excellently illustrated by the carrot family or *Umbellifere*. To this family belong the

caraway and carrot, the wild parsnip, the water hemlock, and water parsley—plants growing luxuriantly by the roadside, along the river, and in the meadow. The flowers differ very little in structure, and the species can be identified only by the aid of the mature fruit. The nectar is secreted in a thin layer by a fleshy disc surrounding the style. Insects of every kind are made welcome, and no other family of flowers has so large a number and variety of visitors. On some species more than 200 different kinds of insects have been collected. The anthers and stigmas mature at different times, so that self-fertilization is prevented. Admirable simplicity and perfection are here combined. This type of flower is not, however, well adapted to honeybees, partly because of the scarcity of the nectar, partly because of the great number of other guests, and partly because the nectar on a flat surface can not be easily collected by long-tongued insects.

In the heath and huckleberry families there are many small white cup-shaped or urn-shaped pendulous flowers which are very attractive to honeybees and bumblebees. In the orchid, pea, mint, and figwort families there occur many irregular white flowers which have been derived from yellow, red, or blue ancestors, partly as the result of retrogression and partly, perhaps, because of the advantage arising from a contrast of colors between closely allied species blooming at the same time. Asa Gray is reported to have said that any colored flower might revert to white, and this is undoubtedly true.

Finally there are many very small white flowers which are solitary, or at least not densely clustered, which are of little value to the beekeeper. Some fifty-six such species belong to the pink family; they are low-tufted weak herbs of a spreading or ascending habit represented by the chickweeds and sandworts. They are chiefly visited by flies, beetles, and the smaller bees.

White flowers probably exceed all others in importance to the beekeeper. Says the A B C of Bee Culture, "We could better spare any of the rest, and I might say all of the rest, than our white clover that grows so plentifully as to be almost unnoticed everywhere." Besides the white and sweet clovers there are the buckwheat, button-bush, locust, palmettos, and a great variety of fruit-trees and berry-bushes. Scholl states that in Texas the sweet clover (*Melilotus alba*) and the common hoarhound are both important honey plants.

Waldoboro, Me.

THE DRONE AS COMPARED TO THE QUEEN AND WORKER

BY D. M. MACDONALD

Some points wherein there is a distinct differentiation between the drone and the two other orders of the bees in the hive are

patent and well known. Thus the male has no wax-pockets, for obvious reasons. Everybody knows it has no sting—not even a rudimentary trace of one. Wax-glands would be a superfluity, and therefore, wisely, they do not exist. A drone with a fully developed honey-sac would be an anomaly, because it carries no load of sweet nectar into the hive, and regurgitates no honey into the cells; yet it has a rudimentary honey-sac fairly developed. A true stomach it has; but the parts in the worker yielding the chyle food for the young are absent, and the whole of the four systems of gland structure are either absent, degenerated, or show only a trace of their existence. He does no work in the hive, for the very good reason that he is incapable of performing any, the tools with which these various labors are carried out having been denied him. The button, or spoon, on the point of his tongue has been atrophied, so that he can sip no nectar from the flowers. The rod is invisible on his tongue, therefore he can not collect honey; while if he could, the absence of the appliances for regurgitating the true nectar into the cells shows us he could not store honey, even were he capable of collecting it. His hind legs lack pollen-baskets, and he has no currycombs or pincers. Not having to take part in the elaboration of wax, its transmission from the wax-pockets by means of the pincers is not required of him. The saliva for bestowing on the scales fluidity or ductility can not be prepared by drones, neither can they use wax to construct cells or cap them. Appliances for converting the cane sugar of nectar into the grape sugar of honey would be useless, consequently they are wanting. The production of brood food and royal jelly are things impossible for these males, therefore in all drones the gland structures have been aborted, or, from the effects of sex selection, eliminated.

The worker bee is one of the most intelligent insects in creation, and is provided with a brain quick, subtle, and so far seeing that it must excite our admiration. Not only relative to size, but actually, the brain of the drone is much smaller, and especially does this hold good in the pedunculated parts where intelligence is chiefly originated. Every one knows the drone is far from having the credit of any great intellectual possession. The brain, indeed, has been atrophied in order that the sexual organs may be highly developed, just as the queen's ovaries have been perfected to the detriment of her intellectual powers. Nature often thus compensates one member of the body by the sacrifice of some less important organ.

Glancing at the body of a drone, let us now note a few points wherein he has been more highly favored than either queen or worker. In the head we find his compound eyes marvelously developed, as we shall see later, for a wise and necessary cause. His antennæ have each an extra joint, the queens and workers being provided with only twelve

joints to the male's thirteen. These mysterious "feelers" are also more profusely provided with "smell hollows," no fewer than of these being found on the two antennæ. They are indeed crowded together so closely as to give little or no room for the tactile hairs. For the male which is to seek the female, this is exactly what might be looked for. He possesses sixteen spiracles instead of fourteen, and thus his air-sacs are enormously developed. He has a very large spread of wing compared with that of the queen or worker while the hooklets number 24. Various other organs are more profusely covered with hairs than those of either queen or worker, and this is particularly noticeable on the front of the face, the hairs on the jaws, the feathered hairs on the digiti, the first dorsal plates, and on various parts of the abdomen. His one duty requires that he be highly fed, for only concentrated food can fully develop the contents of his spermatophore; therefore he feasts like any gourmand and lives the life of a sybarite.

If we consider the one duty of the drone's life, that for which he has been called into being, we shall at once appreciate the reason for the special development of his wing powers, the extra perfection of his antennæ, the abnormal size of his compound eyes, and the enormous number of his smell-hollows.

The drone's powers of vision and of flight are magnificent. His splendid compound eyes are admirably fitted for carrying out the one duty and function of his existence. Occupying almost the entire space on both sides of his head and a great part of the front, they are excellently adapted to assist him in carrying out his great work to perfection. In his flights through the air their immense magnifying powers enable him to pierce with keen vision the liquid blue, and so he is enabled to detect any royal virgin out for her nuptial flight, while all three ocelli, or simple eyes, placed in a close cluster right in front of his forehead, closely observe her every motion, and follow minutely every movement in her quick aerial flight. Rapid as is her progress in the pure ether, his powers of flight excel, though only in this case one out of (it may be) a thousand. Swiftly and unerringly, therefore, he pursues her until he brings about the great consummation of his existence. Those who stupidly and erroneously designate him a lazy drone should see him then, when every muscle is strained to the fullest tension, when every nerve is strung to its utmost powers; when every thought and sentiment of his being is focused on one object—to outstrip all rivals and be the first to reach the goal of his and their longings.

The race is here to the swift! All puny, weak, or starveling males; all who are small, feeble, or delicate; those undeveloped, dainty, or luxurious; and all sickly and infirm, each according to the want of vitality, drops out of the race at an early stage until only the virile, vigorous, and manly remain.

At length only a tithe of the most powerful and best developed remain as royal suitors. At last only the fittest survives and becomes the means for perpetuating the race. Here is a scheme magnificent in its conception, exquisite in its development, and perfect in its fulfillment.

Tennyson tells us that out of a thousand seeds "Nature doth make but one to bear;" and so it is with the drones in our hives. Their great number is easily explained by the fact that the queen has to go abroad on her marital flight, and that only after a prolonged and risky journey in the air does the chosen suitor meet her. Nature thus secures by an almost invariable law the survival of the fittest.

As is well known, the drone takes 24 days to develop from the egg to the perfect insect. While the egg hatches, in the ordinary, in three days, he is fed as a larva for an extra day. He takes three times as long as the queen to spin his cocoon, and continues more than double the time in the nymph stage. His food almost from the first differs. His natal cradle is much larger than that of the worker. He is fed all his life, but on a food different from that fed the queen; yet the workers highly pamper him. His voice is different, and the deep sonorous sound of his flight can never be mistaken for that of either of the others. Having no sting he can not well defend himself, and is, therefore, at the mercy of the smaller females when they wish to evict him. These subtle ladies, however, get rid of him by simply withholding the chyle food, formerly lavishly supplied, when they considered the fate of the hive might hinge on his act. Small though they are, bulky though he is, they are the masters; and when the fit time arrives for sacrificing these now useless intruders they ruthlessly carry out the act without the least compunction.

The drone was a mystery to the ancients. Why, they pondered, should a class of idlers exist in a community where all others are workers? Why should they be consumers where the workers are all producers? Being the greater bee, why should he be in subjection to the smaller? Why should they be so ruthlessly evicted? Were they simply nurses? "They sit on the cells as a hen doth on her eggs," wrote Hill. Were they bees which had lost their stings? Were they captains acting under orders of the king? Were they really a redundancy of nature? Virgil asserted that they brought the seeds of the young from the flowers. Butler came near the truth; but 150 years after, Rusden thought their great work was "sitting on the eggs." Later, Huish held that every egg is visited by the drones in the hive, and dealt with. It was only about a century ago that the researches of Huber and succeeding investigators convinced beekeepers that the only reason for the drone's existence is to fertilize the queen—which conclusion will never be questioned.

Banff, Scotland.

Heads of Grain from Different Fields

Square Beeway Sections v. the 4 x 5 Plain

1. In comparison, all points considered, for comb honey, what advantage, if any, has the $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{2}$ over the 4 x 5 x 1 $\frac{1}{2}$ section?

2. Is there a preference on the part of the retailer of honey? Why?

3. Is there a preference on the part of the consumer? Why?

4. Which size stands shipping best? Why?

5. Do you consider it difficult to secure proper grading weight in 4 x 5 x 1 $\frac{1}{2}$ sections and not have honey project beyond the wood?

6. Is there any complaint that the average person handling honey bruises or sticks his finger into the 4 x 5 more than the $4\frac{1}{4}$?

7. Is there any difference in price of honey, one over the other?

8. What section do you advise one to start with? Why?

9. Does comb honey ship safely long distances when packed in carriers, eight cases each?

10. Is there any advantage in packing or placing each section in a carton and using the heavier shipping-case?

11. What effect will the National Association have in recommending the $4\frac{1}{4} \times 1\frac{1}{2}$ over or against the 4 x 5 x 1 $\frac{1}{2}$?

Hagerman, N. M., Jan. 30. HENRY C. BARRON.

[1. This involves the consideration of plain sections and sections with beeways. A $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{2}$ is a beeway section, while the 4 x 5 x 1 $\frac{1}{2}$ is a plain section. The plain sections are cheaper in first cost, a little easier to scrape and clean of dirt and bee-glue, take a little less room in the shipping-case, and, in the minds of a good many, present a little nicer appearance, because the comb itself comes out a little more nearly to the edge of the wood. On the other hand, there are those who object to plain sections because they are more difficult to get out of the shipping-case, more danger of abrading or damaging the surface of the comb in removing from the case, because fence separators for the plain sections are more expensive than the separators for beeway sections, and because, under some conditions during a heavy flow of honey, a small percentage of the honey will take on a wash-board unevenness. This last objection is not a very important one, because only about two to five per cent of all the honey so produced will show this. There will be a larger percentage during a heavy flow of honey or in the case of extra fancy or well-filled sections.

The next question naturally revolves around the shape or size of the section. The $4\frac{1}{4}$ square is an old standard dimension. While the 4 x 5 or $3\frac{3}{4} \times 5$ is a newer style that was introduced in New York by Capt. J. E. Hetherington, it has come to be used quite largely now, because any article of food looks better, it is contended, that is taller than broad. The tall section is only an effort to cater toward making the package conform to all other packages holding food on the market. Pound for pound, a tall section looks larger than one that is square; and in the case of the 4 x 5 the section looks a great deal larger because it has a thinner comb than that in the 1 $\frac{1}{2}$. Again, it is argued that the bees will build out and finish a thin comb faster than they will a thick one. The experience of many buyers is that the combs in the 4 x 5 sections are more solidly attached than they are to the $4\frac{1}{4}$ square. Part of this is due to the thinner comb which the bees attach better, and part to the fact that there are longer vertical sides for attachment.

2. The answer to this question depends somewhat upon the locality. In many parts of the East the 4 x 5 section is preferred to the square one, while in the West the $4\frac{1}{4}$ square section is used almost exclusively. In many of the Eastern cities the dealers prefer the 4 x 5 sections. They claim that, when the square sections and tall sections are put side by side, the tall sections will outsell the square every time. On the other hand, there are some dealers who claim they notice no difference, and that customers will buy whatever is offered them.

3. This is partly answered in No. 2. As a general thing, we think we may say that, of two sections evenly filled, the customer will take the tall section because it looks larger for the same money. It is for this reason that the tall section brings a higher price in some markets than the square.

4. It is our experience that there is not a great

deal of difference; but the difference, if any, is a little in favor of the 4 x 5 section.

5. The answer to this question will depend somewhat upon what is the proper grading weight. The 4 x 5 section does not run a full pound as a rule, unless filled very full. In any case the comb should not project beyond the wood if the proper kind of fence separator is used.

6. Yes, the 4 x 5 section is liable to be damaged a little more than the $4\frac{1}{4}$ square; but there is no excuse for an employee or clerk punching his fingers into either section.

7. The 4 x 5 sections in some markets in the East bring more money than the $4\frac{1}{4}$. As a rule we think the prices run about even.

8. This will depend somewhat upon the locality and the market where the honey is to be sold. We would carefully ascertain what is the general demand in the nearest market, and adopt the section that seems to be called for the most.

9. Yes, providing plenty of straw is used under the cases.

10. Yes, the cartons have a tendency to cushion each individual section so that it does not receive the shock during shipment that it otherwise would. We also think it is an advantage to use a stronger and heavier shipping-case. For a further discussion of this general question, see GLEANINGS, page 361, of our June 15th issue, 1911.

11. It will probably have some effect with a few members; but in most cases the producers will be governed by what is called for in their markets, irrespective of any recommendations made by any bee journal or any beekeepers' association.—ED.]

Swarming a Natural Instinct of the Bee

To my mind the cause of swarming may be given in a very few words. It is the instinct which God gave the bees when he created them, in order that they might increase. If the bees had never swarmed they would not be scattered over all the face of the globe to-day.

Wm. Beucus, Aug. 1, 1911, says that the building of queen cells suggests the idea of swarming. For my part I would rather think that the idea of swarming should account for the building of queen cells. I do not believe that bees ever build a queen cell before they have the idea of swarming.

It is certain that if they never build a queen cell, and if man lets them alone, they will never cast a swarm. But when one sees queen cells started he knows at once that the bees are preparing to cast a swarm, so they must have the idea of swarming in order to cause them to start queen cells. Sometimes, of course, they build queen cells when they wish to supersede the old queen, but not at all with the idea of swarming.

Chickasha, Okla.

J. H. FLIPPO.

Bees Slow to Enter Supers

My bees will not store any honey in the brood-nest, but want to go into the super all the time. If they fill the super next to the brood-nest, then they want to swarm unless more room is given; and at the end of the season, in order to make sure of plenty of stores, I have to leave the extracting-super on the hive. Then in the spring they begin brood-rearing in this shallow super. How can I make sure of winter stores in the brood-nest?

Shelbyville, Mo.

C. H. HOLLYMAN.

[Your question is quite unusual, for most beekeepers find that their bees are slow about entering the supers, and persist in storing in the brood-combs, thus cramming the queen for room. We really believe that this tendency on the part of your bees is a fortunate one; for by keeping good prolific queens you can have your colonies up to the maximum strength by the time the main flow begins. By raising the nearly completed super and putting an empty one underneath, and also providing some upward ventilation, if necessary, during the hottest weather, we think you can overcome to a certain extent the swarming. Of course you can not prevent it all when running for comb honey.

At the end of the season remove the super; and then in the fall, if there has been no late honey-flow to provide winter stores, feed the necessary amount of sugar syrup, and the bees will be obliged to store in the brood-combs.—ED.]

How Hot is the Steam-heated Knife?

I am thinking of getting one of those steam-heated uncapping-knives, but am a little doubtful as to whether it is any thing better than what we have been using. Can the steam-heated knife be kept hot enough so that it will be too warm to lay the blade on one's hand? Does not the steam-tube get in the way much of the time?

We had bountiful rains through March and so far this month, and the prospects seem fair for more. I don't know much about my bees, having been in poor health all winter. The few stands I have here at the house are in good order.

Hemet, Cal.

B. H. HUDSON.

[We have tested steam-heated knives very carefully and thoroughly at Medina. As to whether this form of knife would be more satisfactory than knives that are constantly dipped in hot water will depend somewhat upon circumstances; but we would say very decidedly that in any case where a knife works better because it is hot, a steam-heated knife will be far better than one that is dipped in hot water every minute or two. A steam-heated knife will remain so hot that you can not bear the back of your hand to the blade at any time. It has the advantage that you can keep right on uncapping, and the cappings will fall off without any sticking to the knife itself.

The objection to the steam-heated knife is that the tube interferes a little with the free handwork; but after one becomes accustomed to working the rubber tubing he does not find it any great inconvenience. Another objection is having the little oil-stove in the same room. Sometimes the room where the uncapping is carried on is very small and quite hot. This little stove has a tendency to heat up the room; but if you have an oil-stove for heating the water for your knives, this objection would not really be against the steam-heated uncapping-knife. In a word, we would say that, where it is an advantage to use a hot knife, you will find the steam method of heating the knife far superior to the method of constantly dipping in hot water.—ED.]

No Loss in Alabama Apiary Except Laying-worker Colony

In reading the reports from different States in regard to winter losses we see no report from Alabama. Our bees came through the winter in good order, and are moving right along rearing brood. We did not have a single loss, with the exception of our laying-worker hive which we treated with sulphur.

CONSUMPTION OF HONEY AVERAGES $\frac{7}{8}$ POUNDS PER COLONY.

On p. 153 Mr. Crane refers to Mr. Mollett's saying that it takes from 50 to 75 pounds of honey to winter a colony of bees. We don't know what part of the South Mr. Mollett lives in; but it seems to us that that amount of honey is too large an estimate.

Here are a few figures from our book. We weighed our colonies Nov. 15 and again March 1, and no one colony consumed over 12 pounds, and the average consumption was $7\frac{1}{2}$ pounds during that time. Now, we fail to see where such a difference arises. Possibly it is on account of his "locality."

Mumfords, Ala.

J. H. & J. T. CLARK.

Cooling Hives in Extremely Hot Weather by Spraying with Water

I heartily indorse the method of shading hives with boards on hot days. The method was first suggested to me by an old bee man here. On one occasion, early in April, he lost several stands through negligence in using his customary shade-boards. The comb melted and destroyed the bees. Last summer, when it was somewhat dry, I sprinkled my hives all over with water. I used an ordinary sprinkling-pot holding about a gallon, and added a tablespoonful of salt to each gallon. The evaporation cooled the hives.

Suffolk, Va., Dec. 30.

W. T. BAILEY.

How to Avoid Killing a Large Number of Bees when Putting on Supers

I have studied the bee business for eight years, but never saw in print one particular trick of the trade; and that is, how to avoid killing a good many bees when putting on supers or other fixtures. It works well to put one end of the super

down an inch forward and one inch to the side of the desired position, and to let the other end down slowly, shaking it meanwhile to let the bees get out of the way. If the hands are then placed at opposite corners of the hive with the fingers on the lower story and the palms on the super, by levering between the fingers and the palms one can easily slide the super into place. By reducing the contact surface, fewer bees are killed.

Lakeside, Cal.

G. E. PHILBROOK.

When and How to Have Foundation Drawn Out

I shall have a large amount of foundation to draw out this season. Could you tell me the best steps to take to get it drawn out as early as possible, so as not to tamper too much with the clover crop?

Guelph, Ont., April 13.

FRANK E. MILLEN.

[The only way you can have foundation drawn out before the general honey-flow is to feed with sugar syrup, half a pint to a pint daily. You may have to use more than this. This will be a very good stunt for you, because you can get the combs drawn out and filled with sugar syrup; and then when the honey-flow actually comes on, every bit of the clover will go right into the sections or supers. This is the plan that was advocated by H. R. Boardman a few years ago.—ED.]

Death of Jesse W. Thornton

On April 9, Jesse W. Thornton, ex-president and vice-president of the Washington State Beekeepers' Association, died. He had been ill for some time, but seemed to be feeling better the day he died, and was putting on his coat to go to the city when death overtook him. He was 62 years of age, and leaves a wife, one daughter, and five sons to mourn his loss. He was a minister in the German Baptist Church. He was quite an extensive beekeeper, owning about 200 colonies, and working about as many more until quite recently. He was also a member of the National Beekeepers' Association.

North Yakima, Wash.

J. B. RAMAGE.

Controlling the Clustering-place of Swarms with a Kerosene-soaked Mop

I have read what has been said about carbolized cloths. As my yard is located at the edge of timber land I have used kerosene successfully when swarms have clustered high. I shake the cluster off and sprinkle kerosene oil with a paint-brush around the spot. I also keep a very long pole in the yard, to the top of which is fastened a mop-rag soaked in kerosene. If a swarm attempts to cluster high I raise my pole so that the rag is near them, and usually their next stopping-place is lower down.

Swanville, Minn.

JOHN S. LIND.

Cramps from Eating Honey

For years I did not eat honey, on account of its doubling me up with cramps, page 226, April 15, yet there was nothing so tempting as hot biscuit, butter, and honey for breakfast. After I got bees, and there was plenty of honey around, I could not keep from trying it, and now I eat honey when I want it. Many a healthful breakfast I have of honey, biscuit, and butter, with hot-water tea. It is simply getting used to it.

Galena, Kan., April 18.

J. P. BRUMFIELD.

Colonies Wintered Successfully on Honey-dew

A few years ago I made two winter cases after a pattern I saw in GLEANINGS, to be packed with leaves or sawdust, with a three-inch entrance and tin slide to exclude light. Last summer my bees gathered some honey-dew. Mr. A. C. Miller said they would winter well on honey-dew with plenty of air, so I set them in the empty cases, gave them the width of hive entrance, and the third wrapped in red building paper. Each had a super of dry leaves and 3 lbs. of granulated sugar, but little honey. March 29 they were in fine order.

Rehoboth, Mass.

ROBERT ELWELL.

Information Wanted in Regard to the Aspinwall Hive

I should be pleased to hear from those who used the Aspinwall hive the past season.

Easton, N. Y., April 19.

E. M. SLOCUM.

Our Homes

A. I. ROOT

Belshazzar the king made a great feast to a thousand of his lords, and drank wine before the thousand.—DANIEL 5:1.

In the same hour came forth fingers of a man's hand, and wrote over against the candlestick upon the plaster of the wall of the king's palace; and the king saw the part of the hand that wrote.—DANIEL 5:5.

Then the king's countenance was changed, and his thoughts troubled him, so that the joints of his loins were loosed, and his knees smote one against another.—DANIEL 5:6.

Thou art weighed in the balance, and art found wanting.—DANIEL 5:27.

In that night was Belshazzar the king of the Chaldeans slain.—DANIEL 5:30.

If you have not read the fifth chapter of Daniel recently I wish you would all take a Bible now, or the first opportunity, and read that chapter. Babylon was at that time besieged. If there ever was a time when the king and all his people needed all the wisdom and sense God had given them to protect their city, it was on that very night. If I am correctly informed, the enemy were at that very hour busy in changing the course of the Euphrates River, and they had just succeeded in making the river-bed dry so that the soldiery could march unhindered through it into the city. The first verse of our text tells us that this heathen king, at a time when he *should* have been wide awake, and on the alert, was conducting a great banquet or feast, surrounded by a thousand of his lords; and he drank wine—probably the most expensive kind that the world could furnish at that time. We are told many times in the Bible that, although the great Father suffers long and is kind, there comes a time when he punishes not only individuals but cities and nations; and his rebuke and punishment are often so severe that the whole wide world sits up and takes notice.* The king was awakened from his drunken orgy by a mysterious hand writing on the wall. No wonder his knees smote one against the other. Good faithful Daniel hesitated not to tell him what it meant—"Thou art weighed in the balances, and art found wanting. Thy kingdom is divided and given to the Medes and Persians." On that same night, probably before he had fully awakened from the effects of his drunken revelry, the city was taken and the ungodly king was slain.

Now, when I apply the above well-known incident to the tragic fate of the Titanic you may think my illustration is severe and unwarranted. Let us look at it a little. From the very first I decided that the terrible curse that is resting on our nation (and the whole wide world just now more or less) was responsible for the fact that that great vessel was plowing along among the icebergs at railroad speed. What else could account for such unwarranted and unheard-of course

of action? You have all read, perhaps, over and over, the accounts of the tragedy. It was after we had had several newspaper accounts of the event that I found in one corner of a daily an intimation that some of the *officers* had been *drinking*. Then it came out little by little. The only man on the lookout, when he was more needed, perhaps, than ever before *in his life*, was *asleep*. Another item some days later informed us that the lookout officer on that great steamer, costing toward ten millions, had not even a *field-glass*. The pilot or lookout had *lost* the glass belonging to his post; and when he applied to the proper authority I think that this "authority" must have been drinking also, for the pilot was told that "none would be furnished" him. Other vessels in that region were crawling along slowly, and taking every precaution to avoid accidents from icebergs. I know a little about the matter, for my youngest daughter was on a ship when it struck an iceberg; and, although the motion of the vessel was slowed down to almost nothing, it tipped the vessel over on its side, and made such a consternation that those on board will never forget it. Lest you think I am misinformed, permit me to give the following extract from the *American Advance* for April 27:

As the press showed indications of covering up the seemingly well-founded report that the Titanic went to her death because of drunkenness aboard, *American Advance* wired to Dr. A. S. Gregg, Field Superintendent of the International Reform Bureau, to find out the facts. He wires, as we go to press:

"Louis Klein, a Hungarian seaman of the Titanic crew, who came here in search of work, immediately after the landing of the survivors of the wreck, has made a statement to the Austro-Hungarian consulate and to the federal authorities, charging that some men were drunk and that the only man in the lookout of the Titanic was asleep at the time the ship struck. He says the stewards had given men champagne from partly empty bottles. Klein was taken to Washington last night by a deputy United States Marshal to testify before the Senate Committee which is investigating the Titanic disaster."

American Advance has taken steps to have a staff correspondent on the ground at Washington and in attendance at the Senate Committee's hearings. We intend to probe the matter to the bottom, uncover the full facts, and we will not stick them away in an obscure corner of the paper, either. We have no liquor advertising to lose.

"The night the ship went down," said Klein, according to dispatches from Cleveland, "I was doing patrol duty on the promenade deck, starboard side. I took the watch at 9:30 o'clock, and was to keep it for six hours."

STEWARDS SERVED WINE TO MEN.

"There was a ball following a banquet of some kind going on in the saloon, and the captain and

* We copy the following from the *Scientific American* for April 27 in regard to the disaster:

"How such an experienced commander as Captain Smith should have driven his ship at full speed, and in the night, when he knew that he was in the proximity of heavy ice-fields, is a mystery which may never be cleared up.

"That underwater blow, deadly in its nature, would scarcely have been fatal had the ship been put, as she should have been, under half speed."

* He will not always chide; neither will he keep his anger forever.—PSALM 103:9.

the officers were there with many of the passengers. I thought the White Star Company was connected with it somehow. After the party the stewards served to the crew the champagne and wines that were left. I knew that many of them were drunk."

Let us now investigate a little in regard to the "drink" they had on that occasion, and see what was going on. First and foremost, it was on God's holy sabbath day. I wonder how many even *tried* to "remember" that sabbath day "to keep it holy." There was a ball following a banquet of some kind, and the captain and officers were there with many passengers—probably the *millionaire* passengers, of whom there were several. Women were rescued who had on their ball-room costumes that Sunday night. They had the most expensive drinks. I do not suppose the readers of GLEANINGS even know what a bottle of the best and highest-priced champagne costs. I am glad to confess I have never tasted champagne. I once saw a miserable drunken sot, but whom I judged by his clothing and diamonds and senseless jewelry to be a millionaire. I ran on to this poor creature in the smoking-room of a Pullman car. I never even go through the "smoking-room" if I can help it. This man, with his bloated, livid, wrinkled face, which was in striking contrast to his flashing diamonds, had just opened a bottle of champagne; but his poor shaking hand would hardly permit him to pour the foaming stuff into the glass. With eager haste that made me think of a starving man he tried to get the foaming liquid to his lips; and when he did so he acted like a drunken man catching at a straw for safety or relief. I have seen the price of champagne on the bill-of-fare on Pullman cars. Thank God it is banished from the greater part of them now. I remember seeing it priced at several dollars a bottle. A friend tells me the price is usually five dollars *and up*. There are thousands of people starving at the present time, not only in foreign lands, but many who, in consequence of the recent floods, are probably suffering from a lack of food in our own nation. Now, what do you think of a man or woman who will drink champagne at such a price when people just as good and praiseworthy in every way, near by, perhaps, are suffering for food, or, say, for a drink of milk? No wonder there is war, especially in our great cities, between labor and capital. The *Advance* suggests that the daily papers suppress the matter of drink on account of the liquor advertising they carry. Let me digress enough to say right here that I am about ready to declare I will never vote for another candidate for President, Governor of the State, nor for a public official of any kind, who has not the manliness and courage to come out squarely against the liquor-traffic.

Just one thing more about champagne. We read between the lines that it flowed as freely as water. Indeed, these drunken millionaires, some of them probably like the wretch I have described, had all they could drink (of this *expensive* wine) and more too; and out of the kindness (?) of

their hearts they sent the partly emptied bottles down to the under officers, kindly remembering the good lookout at his post while they were coming into the region of icebergs.

But, thank God, there is something to be said in the way of praise for the men on board of that ill-fated ship as well as criticism. When they were thoroughly aroused from the effects of the drink they began to look up the lifeboats. It was supposed to be such an impossibility to sink *this* vessel that the customary equipment of life-savers was cut down very much. I presume few thought there was much danger of the vessel going to the bottom—*two miles* to the bottom. This was a British ship. The crew were supposed to be under British drill, and they were a manly set of fellows besides. For safety the women and children were put into the lifeboats, with the exception of a few women who would not leave their husbands. Dear reader, probably you have never been in such a predicament. I have tried to face the question myself. Would Mrs. Root consent to step into a lifeboat and leave *me* to go down? I have not asked her; but I know without asking. She would declare in an instant that she would stand by my side in the hour of trial. My conscience troubles me to think how poorly I have remembered the oath I took to love, cherish, and protect *her*, before God and man; but when she made the same promise before God, she has for over fifty years lived up to it to the very letter. I might try to persuade her that, for the sake of the children and grandchildren, she should save her life. I might tell her I could swim and keep afloat long enough to be able to be picked up; but I do not think she would listen an instant. Thank God for these devoted, loyal, Godlike women. Mere gratitude to them for what they have done is the smallest debt we owe them. And those men, something like 1600 of them, showed their manhood and courage by unflinchingly facing death. The band played, "Nearer, my God, to thee," and kept it up until the water was up to their knees. I think one report states that the final strains of that grand old hymn (written by a woman) were given from their instruments on bended knees. If I remember, the captain of the ship rescued a baby and got it on board of one of the life-savers. He refused to be pulled in himself, even though there was room. I suppose that he and the rest of them reasoned that, when the men should see them climbing into the boats, others would try to follow, and the boats would be swamped. Some who were saved on a sort of raft made of the broken collapsible boat tell us that there were *prayers*, not only from many who never thought of praying till then, and some who knew no other form of prayer, repeated the childish ones taught them by faithful Christian mothers at the mother's knee. Whatever we may say in criticising the carelessness and the unwarrantable speed at which the

vessel was running amid dangers of that kind, let us remember the heroism and manliness of over a thousand men who, having done every thing possible to save the helpless women and children, calmly and unflinchingly faced death.

I think the tragic events narrated in the fifth chapter of Daniel must have had a wholesome effect on the people of that day and generation. The Iroquois Theater disaster in Chicago in 1903 had the wholesome effect of stirring up the whole city and other cities to the importance of remodeling great auditoriums. The Slocum disaster, six months later, when about a thousand men, women, and children, were burned to death and many drowned near New York, caused a general housecleaning and overhauling of excursion boats. And, later still, when a school at Collinwood, near Cleveland, caught fire and burned up about 180 children, a wave of reform went all over our land and over all the world. Even down at Bradentown, Fla., a hurried consultation of school directors was held, and our two-story wooden schoolhouse was speedily alive with carpenters, on one side at least, and a wide outdoor stairway was built up to the second story, equipped with doors that swing outward, so the hundreds of little ones there gathered could get out speedily and safely in case the wooden structure should take fire. I mentally thanked God every time I passed that stairway on my daily trip with the automobile. Again, a year ago last March a large factory burned in New York, resulting in the death of about 127 people, mostly young women. All escape except at the windows was cut off, and again the world was horrified by what happened, and incensed to think how easily the trouble might have been averted. But it led to an overhauling of buildings in that great manufacturing center, which may be the means of saving more lives than were lost.

Last Thursday evening here in Medina my heart was rejoiced to see almost a hundred people at our weekly prayer-meeting. I told them that I had been praying for our prayer-meeting, and inviting people to come, *for nearly forty years*, and the answer to those prayers had come during my absence last winter. Well, I was greatly touched by the young man who led the meeting. There seemed to be such a feeling of sadness and sorrow in his countenance, together with his bright shining face as he unfolded the glorious promises of the lesson before us, that I thanked God. After I got home I was told that his only little girl perished in that Collinwood fire, and the look of sadness had never been noticed until after that terrible event. It seems necessary, sometimes, in order to bring about needed reforms, and to rouse up poor sluggish humanity, that many must die as martyrs to the good cause. May God help me to be ready to die, should the time ever come, when I am needed as a martyr to the cause of spreading temperance, righteousness, and the gospel of the Lord Jesus Christ.

WIRELESS TELEGRAPHY, ETC.

Without wireless telegraphy, which seems to be making such wonderful strides just now, probably not a soul would have been saved from the Titanic in that fearful tragedy I have just been describing. Almost constantly we are hearing news of rescue on the sea by means of this wonderful means of wireless communication; and a recent issue of the *Scientific American* informs us that wireless stations are now to be set up or are being set up so as to compass the whole globe on which we live, or at least such a part of it as constitutes traffic on the sea as well as on land. Dear friends, do you ever stop to consider what the outcome is going to be if great inventions keep on during the coming fifty or sixty years as they have in the past? I can almost remember the advent of railways, great steamships, telegraphs, etc., and many of us of middle age remember when there were no electric lights, no telephones, no photographs; and even the children remember the time when there were no moving-picture shows nor flying-machines. What is coming next? It is evident that God is *now* working out his plans for humanity—plans conceived, perhaps, ages ago. Has he been waiting for us to rouse up and wake up? You and I both have seen boys brought up on the farm, or in humble homes. There was nothing in their boyhood or childhood to indicate more than ordinary ability, and now they are scattered over all the world, *some* of them occupying great and important positions, and drawing salaries *unheard of* a few years ago. Again I ask, what is coming next? Are we going to explore the inhabited planets? and *finally* is the great Father in his mercy, love, and goodness, letting us get just a *little* glimpse of the great unknown, *beyond* the confines of *this* transient pilgrimage?

FLORIDA INVESTMENTS.

All winter long I have been getting letters, more or less, from all over the North, from people who wanted my opinion regarding purchasing real estate down here. These people often give me a list of bargains that have been offered them, and refer to or submit the circulars and descriptions, etc. Sometimes they ask which *one* they had better invest in. My advice has been right along, don't invest in *any* of them. Do not under any circumstances think of investing in anything down here in Florida or Texas, nor anywhere else in the way of real estate, until you go and look it up yourself. Don't depend on somebody else. Some time ago there was much said about St. Cloud, a home for the "old soldiers," etc. A brother-in-law of mine has just returned from there, and gave me some points. He could hardly find words to express his indignation at the people who had swindled old soldiers by getting them to go down there and make investments. It is true that, while the excitement is high, and while the "gamble"

is going on, there is sometimes a chance to invest money, and perhaps get it back and more too. As an illustration, a brother of his invested \$100 without seeing the property, several years ago. A year later he was offered \$400 for the particular lot he had purchased. As there seemed to be a prospect that it would go still higher he did not sell out. Now, however, he would be glad to get back the original \$100 he invested; but as there are hundreds in the same predicament there is no *possible* chance of selling out at any price. St. Cloud is only an illustration of many other speculations of this kind. The "syndicate," or whatever you call them, by buying large plots of land bought some of it as low as 80 cts. an acre. They divided it up and made their lots, did a lot of advertising, and sold it for thirty or forty *dollars* an acre. If they could sell all these lots at the prices they had planned, making a city something like New York, for instance, it *would* be a big thing. Bubbles like these are being started and exploded or burst all over Florida and other States. By shrewd advertising and investing considerable money they can keep the thing going for a little while; but the outcome of the biggest part of such speculations is an abandoned town. Another thing, buying and *selling* real estate is a trade of itself; and if you have not had any experience in it you had better let it alone. *Still* another thing, a good deal of it is really *gambling*. Frauds and swindles have been so frequent in connection with the "Everglades," which you probably all read about, that the Department of Agriculture at Washington has

taken the matter in hand. Quite a few beekeepers who call to see us confess that they have invested in Florida Everglades. A good many find that their investment of their hard-earned money is in land that is under water. The syndicate promises to have the water off in due time so the land can be used for farming and agriculture. May be they will get the water off, and may be they won't. Many people also write me and ask if they can get employment down here to spend their winters. When you look about you, you see certain people who *always* have something to do, and also other people who seem to be depending on somebody to get a job for them. If you have trouble in getting something to do up North or anywhere else, I think very likely you will have trouble here. If you always have more work ahead of you than you can possibly take care of, you will find it will be a good deal the same down here. *Capable* men are wanted everywhere; but men who are always having bad luck don't seem to be wanted *here* or anywhere. Here in Bradentown, where there has been so much building going on during the past winter, there has been an unfilled call for skilled carpenters. A young carpenter from Indiana happened to pass by my place one day and stopped to talk a little. He said he had been here only six weeks, and had earned enough at carpentering to send home \$100 already. In conclusion, if you want to know about these things you *must* come down here; and, once more, don't *think* of investing money until you see what you are buying.

POULTRY DEPARTMENT

A. I. ROOT

TWO EGGS IN ONE DAY FROM ONE DUCK, ETC.

This has happened three or more times during the winter; and I would have said more about it had it not been for the fact that this same duck averaged only one egg a day. As is well known, the Indian Runner ducks usually lay their eggs about daylight, sometimes a little before. Well, for months past I have been getting three eggs a day from three ducks. One of the three, however, instead of laying with the others as usual, very early in the morning, at three different times, and perhaps more, instead of laying in the morning she dropped a very soft-shelled egg about dusk the night before. This made four eggs from three ducks during daylight of a single day; but on every occasion she laid no egg the next morning. Now, these eggs that were dropped prematurely the night before were all soft-shelled—so soft that, if they did not break when resting on the ground, they would break unless very carefully handled. From this I infer that it takes twelve hours or more for a duck to complete the shell so that it will be hard enough and firm enough to be han-

dled. As the ducks were spending their time during the day in the canal, and there was an abundance of shells in the same canal, I thought it could not be that they lacked lime; but after I gave them a dish of crushed oyster shell, and also another dish of mica crystal grit, no more eggs were dropped the night before.

From the above I am inclined to think that most if not all the records of hens that have laid two eggs in a day were like the above. One egg is laid very early in the morning, and the other in the afternoon or at night. Some time ago my brother wrote about finding eggs under the roosts. The roost was so low down that the eggs as they dropped into the soft dry sand were seldom broken. But my experience has been that these eggs dropped in the night or very early in the morning are mostly soft-shelled. Many of them are broken when picked up. During several past winters I have found more or less eggs under the roosts in the morning; but for some reason which I can not explain, during this winter scarcely an egg has been dropped in the night in this locality. Perhaps it is because of late our

hens have been better supplied with crushed shell and grit than ever before. Soft-shell eggs are to be avoided as far as possible, because it is almost sure to get the hens into the habit of eating their eggs.

DUCK-HOUSES, DUCK-BROODERS, ETC.

Heretofore when my growing ducks got so large as to crowd their brooder, we have been in the habit of changing them to a larger-sized house or coop. Now, changing chickens or ducks from the home that they are accustomed to, to a different one, is always a bad plan. This has been frequently talked about in the poultry journals. In a recent *American Poultry Advocate* a lady advised giving ducks more room when the weather becomes warm, by attaching a dooryard made of poultry netting. This covered dooryard would permit them to go outdoors or inside according to the weather to suit themselves. Just now (April 10) we are having warm weather down here in Florida; and I notice that, when I try to get my ducks to go in at night, they greatly prefer sitting around in front of the door. I have learned by sad experience, however, there is no safety for ducks here until half grown or more *unless* they are securely fenced in by wire cloth or otherwise during the night time; and, in fact, I lost one duck during a moonlight night when it was fully eight weeks old. I don't know what became of it unless it was taken by the midnight owls. Since then I have had them securely "fenced in" by wire cloth every night, and no more have been lost. The same is true of our chickens, both little and big. At dark I shut them all in their enclosure, and let them out again by daylight next morning.

A SCREENED "PIAZZA" FOR THE GROWING DUCKS AND CHICKENS.

This afternoon I have just added a covered wire-cloth dooryard, just like a front porch or piazza for people. Since I have seen how nice it works I am sorry that I did not have this dooryard enclosure for my little ducks whenever the weather was so warm that they *prefer* to be outdoors instead of inside. When first taken out of the incubator I have several times given them to a sitting hen, giving a hen as many as twenty or thirty. Now, I notice that very soon the little ducks begin to prefer to sit down *beside* the hen instead of getting under her wing, especially when the weather is very warm. I feel sure that the best and proper way is to let the ducklings have their choice. Whenever they want to be outdoors, right under the stars, give them the privilege. This wire-cloth enclosure is made right over the front door where they are accustomed to go in. There is no difficulty at all in getting them to go in at night; whereas if you try to drive them in, especially when it is warm, and they are crowded inside, you will hear them uttering strong protests about being cooped up when they want to be outdoors. I tell you a flock of twenty-five Indian Runner ducks *can* make a protest if things are not to their liking.

The clipping below tells where I got my idea of "front porch" all of poultry netting:

We had coops in which to keep the hens and ducklings, but the babies soon grew too independent for their mothers. They flock together in a very few days, and for this reason ducklings of different ages should be penned separately. They dislike roosting in coops, but will readily go into a pen and roost on the dry litter which should always be kept for them to rest upon, at least until settled warm weather comes. As damp roosting quarters are very bad for them, keep a part of their sleeping quarters roofed over.

DANDELIONS AS A GREEN FOOD FOR POULTRY.

On page 637, Oct. 15, 1911, I spoke about a flock of Wyandottes picking out every bit of dandelion leaf in the orchard where it was grown. Well, just now dandelions are starting up in wonderful profusion almost everywhere. Our orchard of about a hundred trees is divided into three poultry-yards—a fence down through the middle, and then a fence dividing one of the halves of the orchard. A flock of about 25 Rhode Island Reds, and three-fourths or perhaps half as many White Wyandottes, have a fourth of the orchard. While the Rhode Island Reds do not seem to be able to pasture down the dandelions they have access to, the White Wyandottes snatch up every leaf about as soon as it comes in sight. Now the Wyandottes may have a special liking for dandelions, or perhaps they have an "acquired appetite." At any rate, it seems to be the very cheapest way of giving them green food, and they certainly are a healthy lot, and are giving a fine yield of eggs. By the way, I notice in the *Inland Poultry Journal* among their short items the following:

Best poultry tonic on earth is God's tonic—the common dandelion fed freely.

Just now I clip from the *Cleveland Plain Dealer* the following:

In the feeding of ducklings, dry grain is unsuitable. They will not eat enough sharp grit to digest it. Whole wheat and cracked corn, boiled together and let stand until cold, will give good results. But they should not be confined to this alone. They should not be fed upon highly concentrated food, because they will not thrive upon it. Some people will feed their ducklings a regular cornmeal ration, with beefmeal or something similar added, and then wonder why they can not raise ducks. Meat nor ground bone should not be given to ducklings while they are small. Cornmeal should always be mixed with something lighter, such as bran or vegetables, either cooked or raw.

Ducks are very fond of dandelions chopped and mixed with ground grain. Raw cabbage, green rye, and clover are also liked. When potatoes are used, they should be boiled, then mashed, and mixed with equal parts of bran and cornmeal. If the bran and cornmeal are well moistened before being mixed with the potatoes, the mixture will be less gummy than it would be if dry meal were used. A duck can not eat sticky feed.

Never let feed become soured or fermented. It should be fresh and wholesome. Fermented food will cause convulsions in young ducks. Therefore in warm weather feed mixtures should not be allowed to stand even from one meal to another.

Now, if you are inclined to call dandelions a pest on your premises, just try feeding them to the cow, as I have spoken of several times before. If you have no cow, you certainly can afford a few chickens;

and after they learn the trick, dandelions will get to be a great part of their diet.

EGG-TESTERS—SOMETHING NEW IN THE LINE.

In my hand is a circular describing a new invention for testing eggs. A whole trayful of eggs is taken out of the incubator and set over a box containing several tungsten electric globes. The strong light from these lamps coming up through the wire bottom of a tray of eggs illuminates them sufficiently so the unfertile eggs may be picked out from the fertile ones without handling the eggs separately at all. Now, this reminds me of something that I have neglected to mention before. A little over a year ago I sold my Buckeye incubator to a lady in Florida, who lived next door. When I asked her about testing, she informed me that she tested the whole trayful at once by setting them on the carpet before a small south window. The strong light of our Florida sun came through an otherwise darkened room, and struck that tray of eggs and illuminated them sufficiently so the fertile germs were all plainly visible on the fourth or fifth day without handling the eggs. I have never tested a trayful in that way; but I have accidentally laid eggs down in a ray of sunlight, where the fertile germ was plainly visible. But I must confess there is something about it I do not fully understand. You must have your eye in a certain position regarding the sunlight, and your eye must be in the shade. Several times in handling eggs from sitting hens, say after they have been incubated about a week, I by chance brought them into a ray of sunlight while the egg was in my hand, so that the spiderlike blood-veins were plainly visible. At the present time I am not using an incubator; but I ask the friends who are doing so to experiment a little and report, and see if it is not possible to test eggs by the trayful without handling them singly. Our friends who are hatching chickens by the thousand would find such an arrangement a great help. The Reflex egg-tester is furnished by the Eureka Mfg. Co., Pekin, Ill. It is made to be operated by electricity, or by lamplight where a current can not be obtained.

The circular referred to above threatened infringers who presumed to make use of his invention without buying a machine. Now, from the clipping below, from Green's *Fruit Grower*, it would appear that it is by no means a new discovery after all. I am sure that any poultryman is at perfect liberty to use such a machine if he chooses.

A million eggs a day are received at New York, and all must be tested. The eggs are unloaded from a big case into a machine tester and passed along in front of the operator who sits opposite a reflector. The only light that reaches this reflector must go through the eggs. They are then passed on by an automatic tray. By this machine 72,000 eggs have been tested in 4½ hours. By the old method it would have taken a week or more to do the same work. Several of these machines are in use on Market Street in this city for candling the eggs each day as they come from Kansas.

THE VOCABULARY OF THE POULTRY-YARD; OR, THE LANGUAGE OF FOWLS.

If you don't take it already, be sure to send five cents for the April number of the *American Poultry Journal* (Chicago); or, better still, send fifty cents for a whole year; for the opening article from our old friend H. H. Stoddard is well worth the price to any one who loves chickens and is anxious to understand their talk. Friend S. describes their language so far as to indicate 43 different words or expressions, and I can indorse the greater part of them, and I would add at least one more. When you catch a chick that is partly tamed it utters a most plaintive, pleasing note, half way between fright and half alarm. It is such a pleasing (or pleading) babyish appeal that I almost always restore it to the flock again. It seems to say in words, "Oh! please, please let me go; don't you notice how my little heart is beating with fright?" and when set down, there is the prettiest note of gratitude and thanks.

A few days ago I gave 28 chicks, right from the incubator, to a Leghorn hen that had been only one night on a nest of eggs. She looked at the bright little family for quite a while, apparently undecided, but finally ventured just one brief little note, almost under her breath. Let us pause a moment right here, I might almost say "with uncovered heads," as in the presence of the great Ruler of this stupendous universe.

These chicks never saw a mother hen until this moment, and it is not at all certain she ever saw a chick before. Notwithstanding, from that wonderful instinct in her makeup, she uttered a low brief "pass-word." In a second every one of the 28 comprehended the language that was a part of their very makeup *inside the eggshell*, and every chick of the 28 gave a quick and prompt answer. Just then I laughed out loud ("right in school"); and she, becoming frightened, uttered another word of warning and alarm; and every "mother's son" dropped in their tracks as if dead. At first I couldn't understand it until I recalled seeing a mother partridge in the woods of northern Michigan do the same trick. The young partridges were so much the color of the brown leaves in which they hid that you could hardly decide, as they lay still as death, that they were *not* leaves. In fact, these young buttercups looked almost exactly like the baby partridges. There they lay or skulked in the grass until she decided the danger was past, and gave a *third* command to "follow her lead." Since then she has been a model queen, and her 28 a set of most obedient and loyal subjects. They are now two weeks old, and every chick is as bright and lively as a cricket.

One more suggestion in closing. Please consider that this language has been the same for centuries, possibly; and as it seems to be the one particular language used by all the domestic fowls, from the bantam to

the great Brahma, does it not indicate that they all came originally from one common stock? Now, I know the partridges have a similar code or language for their young; but I am not sufficiently acquainted with turkeys to know whether they use the same

or a different system. From my acquaintance with the Indian Runner duck I feel sure their method of communication is different, but it is a good deal along the same line. I am going to make further investigations. Will you help me?

HIGH-PRESSURE GARDENING

A. I. ROOT

SWEET CLOVER AND OUR DEPARTMENT OF AGRICULTURE.

I am very glad indeed to note that our Department of Agriculture has not only seen fit to recognize, but has put out a bulletin, No. 485, dated March 12, 1912, in regard to sweet clover. It has straightened out and given us so much correct information in regard to the many eccentricities of sweet clover that, as I go over its pages, I feel as if I should like to quote from every one of them; and I hope that every one of you who have been interested, and have had opinions either for or against sweet clover in the past, will send for this valuable bulletin. Years ago Dr. Miller said it was beyond his comprehension that sweet clover should grow where and when he did not expect it nor want it, when it would almost *refuse* to grow on nicely prepared soil, and this bulletin tells us why. I extract below from page 12:

It also makes an excellent growth in gravel-pits and stone-quarries, but for some reason does not seem to do well on unsettled cultivated soil. It makes its best growth where the soil is compact, and not crowded with other vegetation.

See also below:

REQUIREMENTS FOR OBTAINING A STAND OF SWEET CLOVER.

A great many farmers have noted the luxuriant growth of sweet clover along roadsides and in other uncultivated places where it grows without any special attention, but have often been disappointed by obtaining a very inferior stand when seeding it upon cultivated land. For this reason it is necessary to look rather closely into the requirements for obtaining and maintaining a successful stand of this crop.

Also the following:

SOILS ADAPTED TO SWEET CLOVER.

Almost any reasonably well-drained soil will grow sweet clover. It is more tolerant of poor drainage, overflow, and seepage conditions than alfalfa or red clover. In irrigated sections, especially where the reservoir system is in use, large bodies of land are apt to become useless for ordinary crops on account of the rising of the water-table in the fields near by. On such areas sweet clover has been observed to make a very vigorous growth.

On page 15 a reason is given for this queer behavior as follows:

PREPARATION OF A SEED-BED FOR SWEET CLOVER.

Sweet clover requires a thoroughly compacted seed-bed with just enough loose soil on top to enable the seed to be covered. The lack of a solid seed-bed is probably the chief reason why sweet clover so often fails when seeded upon *cultivated* fields. The success of the crop on poor hills from which practically all the soil has been removed by erosion, and on newly exposed clay areas where the ground is extremely hard and compact, is thus explained. One field in northern Virginia, sown on a loose seed-bed, heaved out almost completely in the spring of 1911. When a field which has been in cultivation is to be seeded to sweet clover it

should be more thoroughly firmed and better settled than if intended for other crops. Plowing, if necessary, should be done several months before seeding; but it is usually best to seed on ground such as corn stubble that does not require plowing, and depend on a disk, a turning and slicing harrow, or a spike-tooth harrow to cover the seed.

FERTILIZERS FOR SWEET CLOVER.

It is not usually necessary to apply any sort of fertilizer to the ground upon which sweet clover is to be seeded. Its success on the limestone hills, in stone-quarries, etc., would seem to indicate the need of lime in the soil. Its successful growth, however, on soils that undoubtedly are deficient in lime shows that liming may not always be necessary. Sweet clover will probably respond favorably to the regular commercial fertilizers; but owing to the ability of this crop to succeed on many poor soils, especially those of limestone origin, it is probably the better practice to hold the fertilizer and apply it to the cultivated or money crops which follow the sweet clover. No information concerning the use of fertilizers on sweet clover in this country is available.

From the above quotations you will notice that sweet clover as a rule does not seem to be suited to a loose friable soil, such as other crops and other clovers require. Below is a clipping I just found in the *National Stockman and Farmer*:

From time to time I have read in the agricultural press articles on sweet clover. I will give my experience. In 1910 I sowed 15 pounds of the white variety to the acre on a seven-acre field that had been fall plowed and was limed in 1909, and was given a heavy coat of manure in 1908. It was harrowed several times until about the 25th of May, when the seed was sown, and covered with a spike-tooth harrow. Rain came in a few days, and the season was a fair growing one for grass. Well, about one tenth of the seed started; but the plants were small, and all died before winter; but where the seed fell around the edge of the field, and in fence corners, the sweet clover fairly outdid itself. Some of the plants grew four or five feet high. In 1911 a neighbor sowed 12 pounds of buckwheat, and used fertilizer. The sweet clover seemed to all start, and at harvest was half as high as the buckwheat; but after the grain was cut the sweet-clover roots all seemed to die, and before winter were all gone.

Schuyler Co. N., Y.

STEPHEN KELLOGG.

You will see by the above that it did not seem suited at all to the soil prepared for other crops; but when the seed lodged in the hard soil over in the fence-corners it was all right, and made an astonishing growth in a very short time. On our Medina clay soil we have much trouble in winter from plants being thrown out by the frost. Strawberries especially, unless heavily mulched, are likely to be clear up on top of the ground before freezing and thawing is finally over. Some years ago a visitor, an expert strawberry-grower, was going through our grounds in the fall when the boys were hoeing out the plants that had got over into the paths on hard ground where there had been much tramping. He suggested to me that the

plants over in that hard ground would winter all right without being thrown out by the frost; and as I was very much troubled on that ground in that way, I let those struggling plants in the paths remain. It was just as he said. They wintered all right, and were not disturbed by the frost at all. Of course, mulching is a remedy for this trouble, but the strawberry-beds do not always get it. I believe successful wheat-growers have found that packing the ground by repeated rollings in order to make a very firm and hard seed-bed has a similar result; and I think that somewhere in this bulletin there is a suggestion that sweet clover must have hard ground in which to push its roots, in order to crowd that vigorous tap-root away down into the soil two or three feet. To penetrate the hard impervious subsoil there has got to be some powerful pushing, and the plant can not do this unless it has a good firm solid foothold. Do you get the idea?

FAILURE OF THE SEEDS TO GERMINATE.

For twenty or thirty years past, during which we have sold sweet-clover seed, there have been complaints that it did not come up at all, or else only a small part of the seed germinated. And we have found out, also, that, like basswood seed for instance, what did not come up one year might come the next, and so on to the third year or even later. Well, on page 16 there is a remedy besides the well-known one of freezing and thawing during winter and spring. Read the following:

SEEDING SWEET CLOVER.

It usually requires 20 to 30 lbs. of hulled seed and at least 5 lbs. more of unhulled seed per acre. A lesser weight of seed would be sufficient were it not for the fact that often one-half of the seed has such hard seed-coats that it does not germinate the first season, and therefore is practically useless. This retarded germination of the hard seed can be overcome by soaking the seed in commercial concentrated sulphuric acid for half an hour. It should then be quickly washed, using running water if possible, as sulphuric acid becomes very hot when mixed with a small proportion of water. A great deal of water is therefore necessary in order to lessen the danger of burning. The seed should then be dried off quickly by spreading it out on a floor or canvas, and stirring at intervals. The acid corrodes or eats away the hard impermeable seed-coat sufficiently to enable the seed to absorb enough moisture to germinate. This method has been investigated by Prof. H. L. Bolley, of the North Dakota Agricultural Experiment Station, and by Dr. H. H. Love and C. E. Leighty, of the New York (Cornell) Experiment Station. Tests made in the Department of Agriculture gave an increase in germination of 40 to 45 per cent. Great care must be exercised when working with sulphuric acid, as it burns the flesh and any wooden objects badly, and is especially dangerous to have around in the presence of children. The vessels used for treating the seed should be of earthen or enameled ware to prevent corrosion by the acid. After the seed is treated it should preferably be sown promptly, as it has a tendency to dry out after the coat has been eaten off by the acid, but it can be held for two weeks or a month under favorable conditions without any considerable deterioration.

FERTILIZERS FOR SWEET CLOVER.

As a rule, sweet clover does seem to do better on ground where nothing else will grow—such ground as is thrown out in making canals or deep railway cuts, for instance;

but I have *occasionally* seen tremendous growths of sweet clover on ground made very rich with old well-rotted stable manure.

SWEET CLOVER FOR FEED; THE REASON WHY SOME HORSES AND CATTLE REFUSE TO EAT IT.

I was once riding with a beekeeper in Michigan. He said they had sweet clover all around them, but his horses and cattle would not touch it. While we were talking, and the team was naturally moving at a slow pace, all at once his two horses began cropping right and left at the sweet clover that grew by the roadside. Of course we had a big laugh. But he tried to explain it by saying they had a fashion of cropping at any weed or tree, especially when it was near their dinner time. I do not remember just now, but I think this friend discovered later that his horses and cattle *would* eat sweet clover.

Preliminary experiments with leguminous crops, even at the hands of careful experimenters, can not always be taken as final. In this connection it may be mentioned that, when cowpeas were first tried in portions of this country, it was found so difficult at first to induce stock to eat the vines, either when cured or made into ensilage, that even at a certain State experiment station the opinion was expressed that cowpeas were of no local value as feed for live stock. Subsequent developments proved that this crop has great possibilities, even in the sections where the preliminary trials showed it to be very unpromising as a feed owing to the difficulty experienced in making stock eat the forage.

Much greater difficulty is usually experienced in inducing the stock to become accustomed to sweet clover than is the case with other legumes; but the fact that in at least half of the States in the Union stock have become accustomed to eat this plant indicates that the natural distaste which stock at first show can be successfully overcome.

SWEET CLOVER AND ITS VALUE TO CROPS THAT FOLLOW IT.

At the Ohio Experiment Station sweet-clover land gave a yield of 26.9 bushels of corn, as compared with 18.6 bushels on similar land not in sweet clover the previous year. An experiment performed at Tost, Germany, showed that sweet clover preceding oats increased the yield of oats 17 bushels per acre. Part of the field was devoted to potatoes, with the result that the yield was more than doubled when compared with an adjoining plot not previously seeded to sweet clover. Some idea as to the large amount of green material which sweet clover provides for soil improvement is shown by a report from the Ontario Experiment Station in the cutting of over 30 tons of green fodder per acre, as compared with 13½ tons of mammoth clover, which stood next in rank.

Its large roots, which develop the first year, facilitate drainage and do much to break up and improve the tilth of the soils which lie below the reach of the plow, as these roots rapidly decay when the plant dies, and their effect is therefore almost immediate.

In our book on sweet clover I tell about getting a fair crop of very nice potatoes on hard unpromising clay and gravel, thrown out of a deep railway cut, by plowing under a dense crop of sweet clover when it was about a foot high.

The above are only glimpses of the valuable points of the bulletin.

It is fully illustrated with some beautiful pictures of sweet clover and crops that have been grown afterward.

Address the Department of Agriculture, Washington, D. C., calling for Bulletin 485.